

APPENDIX A

NUCLEAR, BIOLOGICAL, AND CHEMICAL CONSIDERATIONS

Current US policy regarding lethal or incapacitating agents is that their use against an armed enemy requires approval at the national command authority level. Potential enemies may not operate under the same restrictions. Field commanders must be prepared to assume an adequate NBC defensive posture when engaged in urban fighting. Leaders must be aware of how the built-up environment affects the protection, detection, and decontamination process. Buildings are usually not strong enough to provide shelter from a nuclear explosion but do provide some protection against fallout. They also have unique characteristics concerning the use of biological and chemical agents. Personnel who must move through a contaminated built-up area should employ the procedures outlined in FM 3-3, FM 3-4, FM 3-5, and FM 3-100.

A-1. PROTECTION FROM NBC

The lowest floor or basement of a reinforced concrete or steel-formed building offers good protection from nuclear hazards and liquid chemical contamination. Tunnels, storm drains, subway tubes, and sewers provide better protection than buildings. Tanks, BFVs, and APCs also provide protection.

a. Biological attacks are difficult to detect or recognize. Biological agents can be disseminated by using aerosols, vectors, and covert methods (see FM 3-3 for more detailed information.) Since biological agents can be sprayed or dropped in bomblets, personnel who observe such indicators should promptly report them. Prompt reporting and treatment of the sick speeds the employment of medical countermeasures. Although buildings and shelters provide some protection against spraying, they provide little protection against biological agents.

b. Chemical agents cause casualties by being inhaled or by being absorbed through the skin. They may afford soldiers a few seconds to mask. Buildings have a channeling effect and tend to contain the effects of an agent, causing great variation in chemical concentration from room to room or from building to building. Chemical agents usually settle in low places, making sewers and subways hazardous hiding places. A prepared defender should include some collective protective measures in the defensive network. Personnel using fans may be able to put enough overpressure into tunnels to keep some chemical agents from entering. The individual protective mask and battle dress overgarment provide the best protection against chemical agents.

c. Personal hygiene is a critical defensive measure against infection and disease. Unfortunately, built-up areas are characterized by sophisticated sanitation systems. When those systems are destroyed, the resulting sanitary conditions become much worse than those in areas where sanitary facilities do not exist. Commanders must ensure that personnel employ sanitation measures and that their immunizations are current.

d. Commanders should plan their MOPP realizing that built-up area logistics also apply to NBC equipment. Protective clothing, detection and decontamination equipment, and sealed containers of food and water must be stockpiled the same as other supplies. When operating in protective clothing, commanders must make allowances for the strenuous activities normally associated with combat in built-up areas.

(1) **Detection.** After an NBC attack, battalions should dispatch their detection and survey teams. Detection in built-up areas is complicated by the containing nature of buildings. Teams should conduct tests and surveys of major streets, intersections, and buildings in their area for inclusion in initial NBC reports. A systematic survey of all buildings, rooms, and underground facilities must be accomplished before occupation by unmasked personnel. All data should be forwarded using the appropriate NBC report.

(2) **Decontamination.** Personnel must begin decontamination operations as soon after an NBC attack as the mission allows. Personnel should conduct individual decontamination of themselves and their personal equipment. Unit commanders must determine the need for MOPP gear exchange and the requirements for a hasty or deliberate decontamination operation.

(a) **Radiological.** Personnel should wear wet-weather gear for certain decontamination operations (hosing down buildings) to prevent radioactive material from touching the skin.

(b) **Chemical and biological.** Roads, sidewalks, and other hard surfaces are best decontaminated by weathering, if time permits. Agents can also be covered with several inches of dirt or sand to provide protection. Fragment testing should be conducted periodically to ensure that the agent has not seeped through the covering. For critical sections of roads a truck-mounted M12A1 (power-driven decontaminating apparatus [PDDA]) can be used to spray STB slurry; this aids rapid decontamination. Buildings are difficult to decontaminate, especially wooden ones. Some techniques for their decontamination are scrubbing with STB slurry; washing with hot, soapy water; washing or spraying with a soda solution; and airing.

A-2. SMOKE OPERATIONS

To stay combat effective when faced with many complications caused by NBC operations, commanders must plan before combat. The use of smoke as an integral part of either offensive or defensive operations can complement missions in built-up areas. Chemical support could be needed from smoke generator units for both offensive and defensive operations. In the offense, smoke can support the maneuver of combat elements and deception operations. Smoke employed in the defense obscures enemy air and ground observation, limiting the accuracy of enemy fires and target intelligence.

a. Smoke should not be used when it degrades the effectiveness of friendly forces. Likewise, an extremely dense concentration of smoke in a closed room displaces the oxygen in the room, smothering soldiers even when they are wearing protective masks.

b. Smoke pots, generators, or artillery smoke munitions should be used to cover the withdrawal of defending forces or the movement of attacking forces. Artillery-delivered white phosphorus can also be effective on enemy forces by causing casualties and fires. The incendiary effects of both white

phosphorus and base ejection munitions on the litter and debris of built-up areas must be considered.

c. Smoke grenades can be massed to provide a hasty screen for concealing personnel movement across streets and alleys. Smoke grenades can also be used for signalling; those launched by an M203 can be used to mark targets for attack helicopters or tactical air.

d. The use of smoke in built-up areas is affected by complex wind patterns caused from buildings. When covering a built-up area with a smoke haze or blanket, personnel must include all buildings. Failure to obscure tall buildings, towers, and steeples provides enemy observers with reference points for fire placement within the built-up area.

A-3. RIOT CONTROL AGENTS

Riot control agents, such as CS and CN, can be used to drive enemy troops from proposed positions or to deny them areas for occupation. Riot control agents are incapacitating but have no lasting effects. They are appropriate when preventing civilian casualties is a planning consideration. However, riot control agents are not effective against an enemy well trained in chemical defense.

APPENDIX B

BRADLEY FIGHTING VEHICLE

Bradley fighting vehicle platoons and squads seldom fight alone in built-up areas. They normally fight as part of their company or in a company team.

Section I. EMPLOYMENT

Fighting in built-up areas is centered around prepared positions in houses and buildings. Such positions cover street approaches and are protected by mines, obstacles, and booby traps. Therefore, bridges, overpasses, and buildings must be inspected and cleared of mines before they are used. Reconnaissance parties must ascertain the weight-supporting capacity of roads, bridges, and floors to determine if they can support the weight of BFVs and tanks.

B-1. TARGET ENGAGEMENT

Streets and alleys are ready-made firing lanes and killing zones. Because of this, all vehicle traffic is greatly restricted and canalized, and subject to ambush and short-range attack. Tanks are at a disadvantage because their main guns cannot be elevated enough to engage targets on the upper floors of tall buildings. The BFV, with +60 to -10 degrees elevation of the 25-mm gun and 7.62-mm coax machine gun, has a much greater ability in this role. With firing port weapons, the BFV can also place suppressive fire at ground level at the same time to the flanks and rear of enemy vehicles. A tank is restricted in its ability to provide this support.

B-2. BRADLEY FIGHTING VEHICLES AND TANKS

BFVs and tanks are not employed alone. Working as a team, dismounted infantrymen (the rifle team) provide security. In turn, the BFVs and tanks provide critical fire support for the rifle teams.

a. When moving, BFVs should stay close to a building on either side of the street. This allows each BFV to cover the opposite side of the street. BFVs can button up for protection, but the BFV crew must remain alert for signals from dismounted infantry. Cooperation between the rifle team and the BFV team in a built-up environment is critical. Visual signals should be developed, telephones used where possible, and rehearsals and training conducted.

b. Commanders should consider using the long-range fires of the tank's main armament from overwatch positions. The BFV, with its greater capability to depress and elevate the 25-mm gun, can provide some of the support previously derived from tanks within the built-up area.

c. Because the BFV, while having better armor protection than the M113, lacks adequate armor protection to withstand medium to heavy ATGM fire, it is normally employed after the area has been cleared of ATGM positions or on terrain dominating the city to provide long-range antiarmor support. A great portion of the platoon's short-range antiarmor fires in built-up areas is provided by LAWs and Dragons. The BFVs 25-mm gun and machine gun are employed while providing direct fire support.

Section II. OFFENSE

Because of the nature of the terrain, fighting in built-up areas is usually conducted by dismounted troops. BFVs are employed as much as possible in close support of dismounted teams. Tanks follow and are brought to locations secured by leading infantry to provide heavy direct fire support. (Figure B-1 shows the organization of the BFV.)

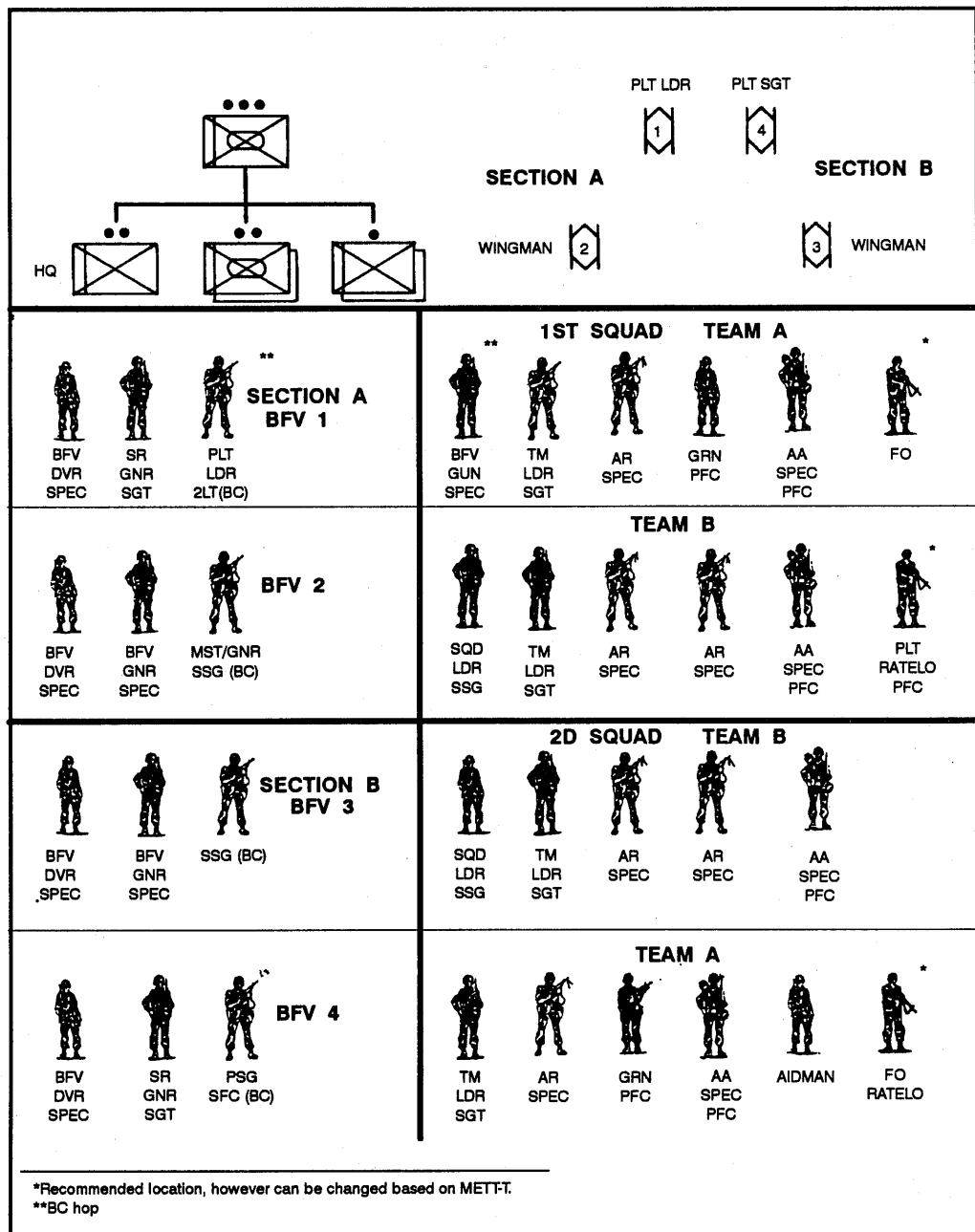


Figure B-1. Bradley fighting vehicle organization.

B-3. MISSIONS

Missions common to the rifle team and the BFV team are explained herein.

- a. The missions of the rifle team during attacks in built-up areas are:
 - Assaulting and reducing enemy positions and clearing buildings under the covering fires of tanks and BFVs.
 - Neutralizing and destroying enemy antiarmor weapons.
 - Locating targets for engagement by tank or BFV weapons.
 - Protecting tanks and BFVs against enemy individual antiarmor measures and surprise.
 - Securing and defending an area after it is cleared.
- b. The missions of the BFV team during attacks in built-up areas are:
 - Destroying enemy positions within a building with the direct fire of the 25-mm gun (using APDS ammunition) and the 7.62-mm coax machine gun (when the wall is constructed of light material).
 - Suppressing enemy gunners within the objective building and adjacent structures. This is accomplished with the 25-mm gun (Figure B-2) and 7.62-mm coax machine gun.



Figure B-2. Suppression by 25-mm gun.

- Isolating the objective building with direct fire to prevent enemy withdrawal, reinforcement, or counterattack.
- Breaching walls en route to and in the objective structure. This is best accomplished with the 25-mm gun, using a spiral firing pattern (see Figure B-3).
- Establishing a roadblock or barricade.
- Securing cleared portions of the objective.
- Obscuring the enemy's observation using the BFV's smoke system.
- Evacuating casualties from areas of direct fire.

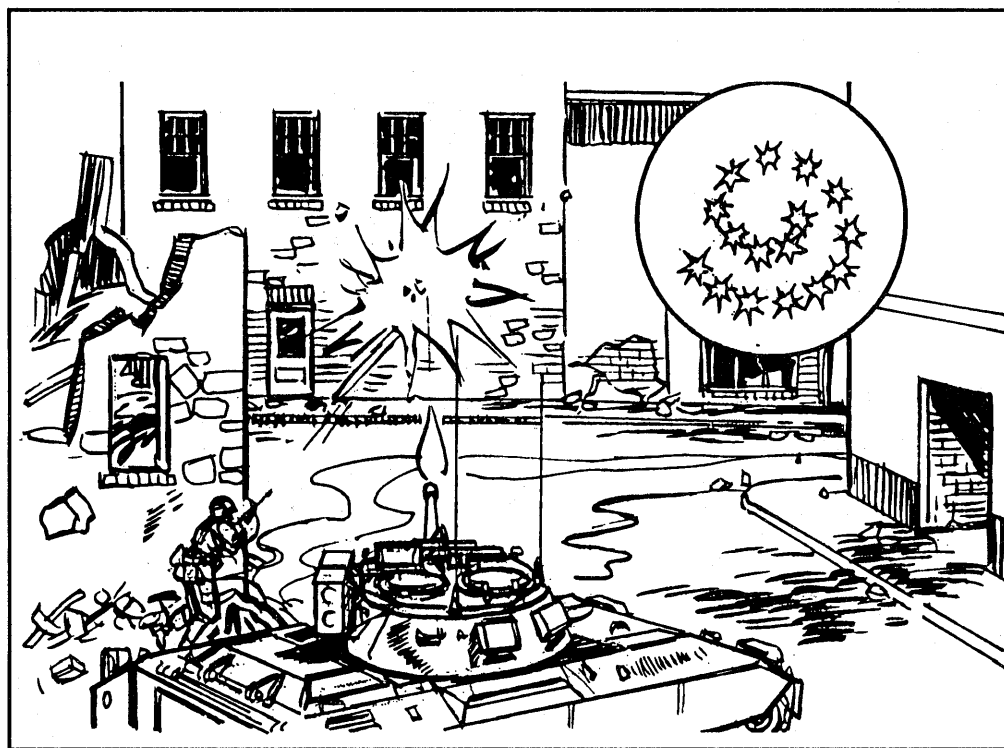


Figure B-3. Spiral firing pattern.

B-4. RIFLE TEAM

The BFV is best used to provide direct fire support to the rifle team. The BFV team should move behind the rifle team, when required, to engage targets located by the rifle team (Figure B-4). The dash speed (acceleration) of the BFV enables the team to rapidly cross streets, open areas, or alleys.

a. The BFV teams provide fire with their 25-mm gun and 7.62-mm coax machine gun for the rifle teams on the opposite side of the street. The 25-mm gun is the most effective weapon on BFVs while fighting in built-up terrain (Figure B-5).

b. The use of the 25-mm gun in support of rifle teams requires safety considerations.

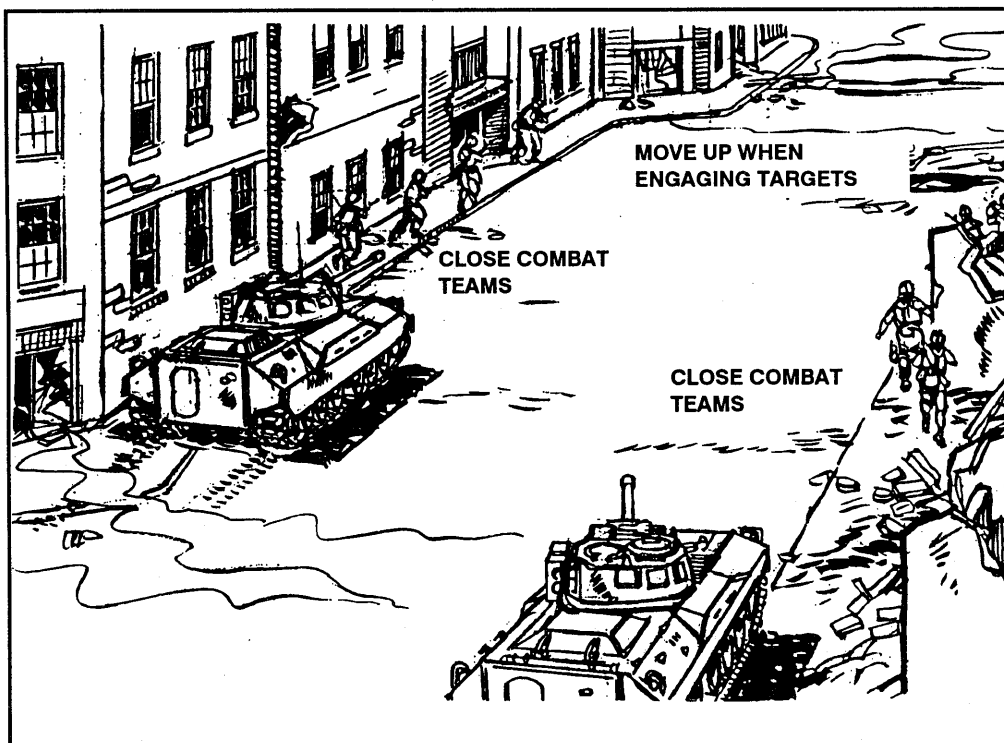


Figure B-4. Cover for rifle teams.

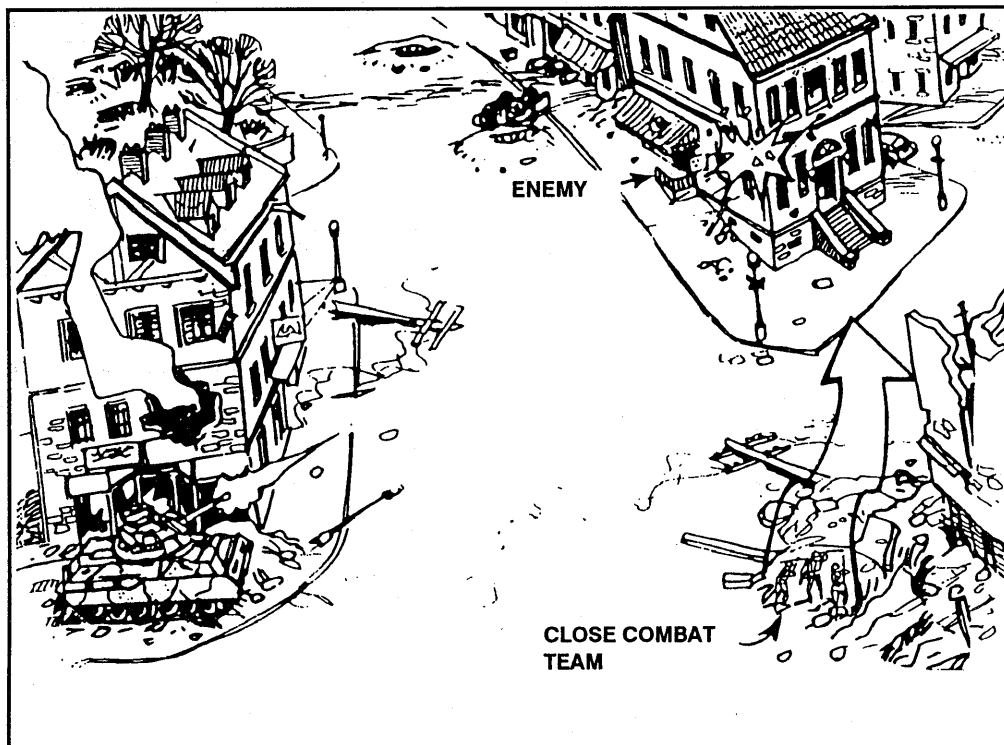


Figure B-5. 25-mm gun support for rifle teams.

- High-explosive 25-mm rounds arm 10 meters from the gun and explode on contact.
- APDS rounds discard their plastic sabots to the front of the gun when fired. This requires a 100-meter safety fan to the front of 25-mm gun (Figure B-6).

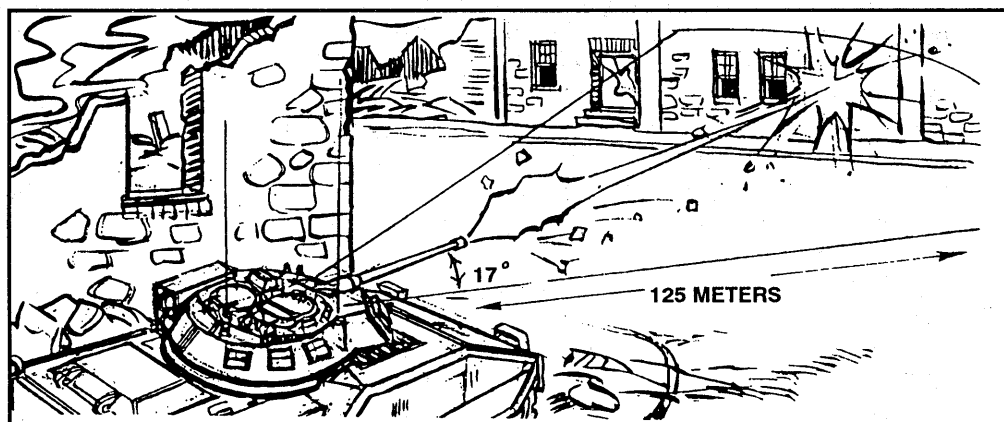


Figure B-6. Safety fan for 25-mm gun.

c. The BFVs' engine exhaust smoke system can be used in built-up areas to cover the movement of the rifle team. The BFV can also provide a smoke screen by using its smoke grenade launchers. This requires careful analysis of wind conditions to ensure the enemy, and not friendly units, is affected by the smoke. This is a difficult task since wind currents tend to be erratic between buildings. The smoke can also screen the movements of the BFVs once the rifle teams cross the danger area (Figure B-7).

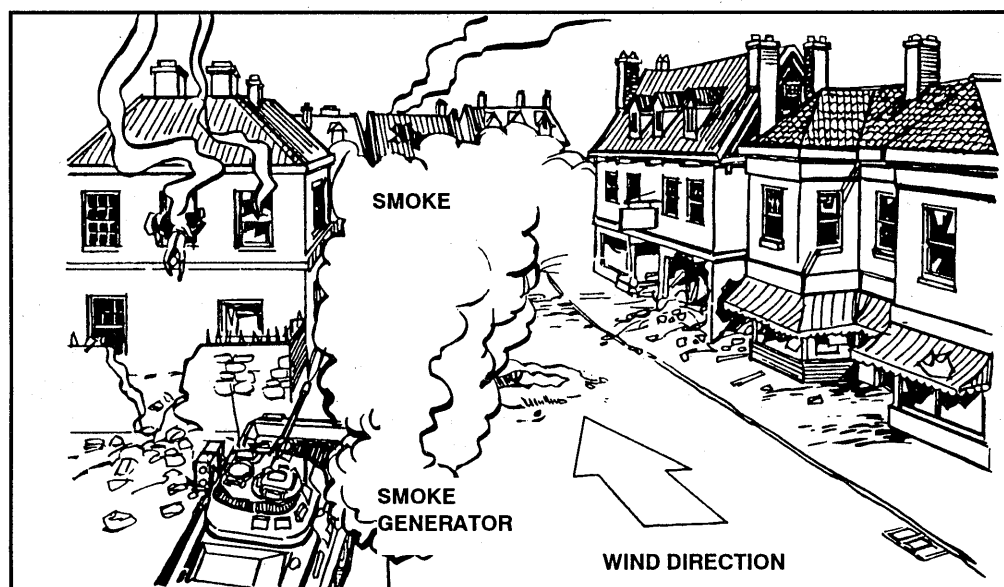


Figure B-7. Smoke screens movement of rifle team.

B-5. COMMUNICATIONS

Communication between the rifle team and BFV crew is critical. These communications can be visual or voice signals, radio, or telephone.

B-6. CLEARING OF A BUILDING

The most common mission of the platoon in offensive operations is to attack and clear a building or a group of buildings. The platoon leader first designates the composition of the rifle teams and BFV teams. The composition of those teams changes with the situation. Normally, the BFV teams and the men needed for security compose the BFV element. Each squad rifle team is organized into two- or three-man assault parties. The platoon leader can designate a part of the platoon as a demolition team. The entire platoon rifle team is normally used to attack one building at a time. In smaller buildings, the platoon leader could have a single rifle team conduct a three-step attack:

STEP 1: The fighting vehicle element supported by indirect and direct fire isolates the building.

STEP 2: The rifle team enters the building to seize a foothold.

STEP 3: The rifle team clears the building room by room.

a. To isolate the building, the BFV element takes an overwatch position (Figure B-8). It fires the 25-mm gun and 7.62-mm coax machine gun, and adjusts indirect fire to suppress enemy troops in the building and in nearby buildings who can fire at the dismounted element.

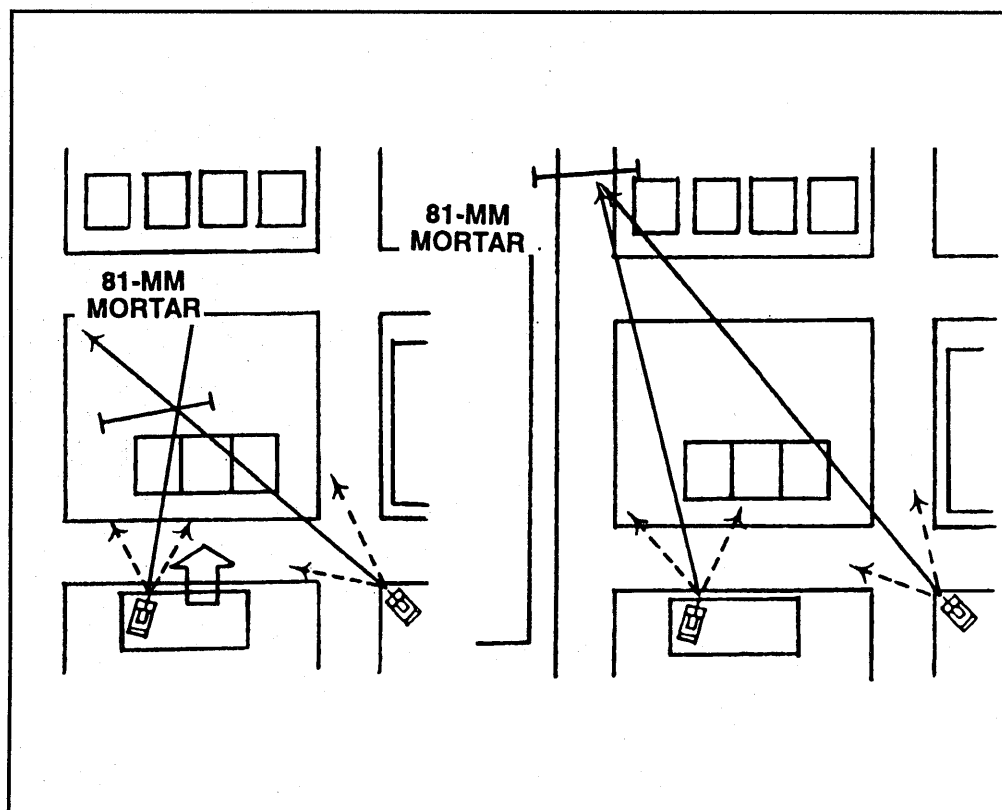


Figure B-8. Isolation of a building and shifting of fires.

b. The rifle teams move to the building on covered and concealed routes. Smoke grenades, smoke pots, and the smoke system of the BFV can provide added concealment. The rifle teams enter the building at the highest point they can because—

- The ground floor and basement are usually the enemy's strongest defenses.
- The roof of a building is normally weaker than the walls.
- It is easier to fight down stairs than up stairs.

c. If there is no covered route to the roof, the rifle teams could encounter the enemy at a lower story or at ground level. They should seize a foothold quickly, fight to the highest story, and then clear room by room, floor by floor, from the top down.

Section III. DEFENSE

Most defensive fighting is performed by the rifle teams. It is harder to build the platoon's defense around the BFV in cities than in other types of terrain, but the BFV element's role is still important. A platoon normally defends from positions in one to three buildings, depending on the size and strength of the buildings, the size of the platoon, and the disposition of the buildings.

B-7. MISSIONS

Defensive missions of the rifle teams and BFV teams are discussed herein.

a. The following are typical missions of rifle teams in the defense:

- Preparing defensive positions.
- Providing observation and security to prevent enemy infiltration.
- Engaging and defeating assaulting enemy forces.
- Acquiring targets for engagement by tanks and BFV weapons.
- Protecting tanks and BFVs from close antiarm or weapons.
- Emplacing demolitions and obstacles (supported by combat engineers).

b. The following are typical missions of BFV teams in the defense:

- Providing fire support for the rifle teams and mutual support to other BFV teams.
- Destroying enemy armored vehicles and direct fire artillery pieces.
- Neutralizing or suppressing enemy positions with 25-mm gun and 7.62-mm coaxial machine gun fire in support of local counterattacks.
- Destroying or making enemy footholds untenable by fire using the 25-mm gun.
- Providing rapid, protected transport for the rifle teams.

- Reinforcing threatened areas by movement through covered and concealed routes to new firing positions.
- Providing mutual support to other antiarmor fires.
- Providing resupply of ammunition and other supplies to the dismount teams.
- Evacuating casualties from the area of direct fire.

NOTE: In the last two missions, the overall value of the BFV to the defense must be weighed against the need to resupply or to evacuate casualties.

B-8. DEVELOPMENT OF THE DEFENSE

The platoon leader must consider the following when developing his defense:

a. **Dispersion.** Defensive positions in **two** mutually supporting buildings is better than having positions in **one** building that can be bypassed.

b. **Fields of Fire.** Positions should have good fields of fire in all directions. Broad streets and open areas, such as parks, offer excellent fields of fire.

c. **Observation.** The buildings selected should permit observation into the adjacent sector. The higher stories offer the best observation but also attract enemy fire.

d. **Concealment.** City buildings provide excellent concealment. Obvious positions, especially at the edge of a built-up area, should be avoided since they are the most likely to receive the heaviest enemy fire.

e. **Covered Routes.** These are used for movement and resupply, and are best when they go through or behind buildings.

f. **Fire Hazard.** Buildings that burn easily should be avoided.

g. **Time.** Buildings that need extensive preparations are undesirable when time is a factor.

h. **Strength.** Buildings in which BFVs or tanks are to be placed must withstand the weight of the vehicles and the effects of their weapon systems.

B-9. FIRE PLAN POSITIONS

The BFV should be integrated into the platoon fire plan. The 25-mm gun and 7.62-mm coax machine gun fields of fire should cover streets and open areas. Once placed in position, BFVs should not be moved for logistical or administrative functions. Other vehicles should accomplish these functions, when possible.

a. Once the platoon leader chooses the building(s) he will defend, he positions his BFV teams and rifle teams. BFVs and dismounted machine guns should be positioned to have grazing fire. Dragons should be positioned on upper stories for longer range and to permit firing at the tops of tanks. Squads should be assigned primary and, if feasible, supplementary and alternate positions for their rifle teams and BFV teams. These positions should permit continuous coverage of the primary sectors and all-round defense.

b. None of the platoon's antiarmor weapons can be fired from unvented or enclosed rooms. However, the TOW can be fired from any room that a BFV can be placed in, as long as all hatches are closed and there are no dismounted troops in the room.

c. Due to the close engagement ranges on urban terrain, the 25-mm gun and 7.62-mm coaxial machine gun are used more than the TOW. The antiarmor capability of the BFV is degraded by short ranges and must be supplemented by Dragons and LAWs (Figure B-9). Dragon and LAW positions should be placed where they can support the BFV but must not attract enemy attention to the BFV location. Dragons and LAWs are much more effective against the flanks, rear, and tops of threat armored vehicles and should be positioned to attack those areas. The TOWs should be conserved and employed against threat tanks as their primary target.



Figure B-9. Dragon position supporting BFV.

B-10. BRADLEY-EQUIPPED ECHO COMPANY

The Chief of Staff of the Army approved the replacement of the M901 ITV with the BFV in mechanized infantry battalions. While this change provides a much greater improvement in mobility, survivability, and firepower over the M901, the basic mission of the Echo Company remains the same. (For more information on the employment of the Bradley-equipped Echo Company [BFV E CO], see FM 7-91 and Change 1 to FM 71-2.)

a. Considerations.

- (1) Due to the lack of a dismounted element, the Bradley-equipped Echo Company must rely on attached and or supporting dismounted infantry to provide local security.
- (2) It should be employed at the very least in sections or pairs (the wingman concept). This provides for some degree of mutual support.
- (3) The Bradley-equipped Echo Company consumes slightly more fuel than a M901 ITV company. This does not present much of a problem since

the additional fuel requirements easily fall within the battalion's organic fuel hauling capacity.

b. Offensive Employment.

(1) The organization of the Bradley-equipped Echo Company makes it a likely choice to provide a base of fire for the battalion task force in the attack. The battalion commander can assign support by fire or attack by fire missions.

(2) It can conduct a guard or screen mission much more effectively than a M901-equipped company since the Bradley-equipped Echo Company has better mobility and firepower.

c. Defensive Employment.

(1) The vehicles should have multiple firing positions. The Bradley-equipped Echo Company commander can control the massing of long-range antiarmor fires into the battalion's engagement area(s) by firing from several directions at once. This has two major effects: the enemy's ability to maneuver his mechanized infantry and armored forces will be destroyed and or degraded; and the survivability of the Bradley-equipped Echo Company's vehicles and crews will be greatly enhanced.

(2) The Bradley-equipped Echo Company, teamed with an armor counterattack unit, can suppress or destroy enemy ATGMs so the armor unit may decisively maneuver.

(3) As with offensive operations, the Bradley-equipped Echo Company can conduct guard and screening operations.

(4) The Bradley-equipped Echo Company can also conduct counter-reconnaissance operations to deprive the enemy of information about the friendly forces' disposition and composition.

APPENDIX C

OBSTACLES, MINES, AND DEMOLITIONS

Obstacles and mines are used extensively in combat in built-up areas to allow the defender to canalize the enemy, impede his movement, and disrupt his attack.

Section I. OBSTACLES

Obstacles are designed to prevent movement by personnel, to separate infantry from tanks, and to slow or stop vehicles.

C-1. TYPES

Antipersonnel mines, barbed wire, booby traps, and exploding flame devices are used to construct antipersonnel obstacles (Figure C-1, page C-2). (See FM 5-25 for more detailed information.) These obstacles are used to block the following infantry approaches:

- Streets.
- Buildings.
- Roofs.
- Open spaces.
- Dead space.
- Underground systems.

a. The approval authority to booby trap buildings is the Corps commander; however, this authority may be delegated to brigade level. (See FM 20-32 for more information.)

b. The three types of obstacles used in defensive operations are protective, tactical, and supplementary.

(1) Protective obstacles are usually located beyond hand-grenade range (40 to 100 meters) from the defensive position.

(2) Tactical obstacles are positioned to increase the effectiveness of the friendly weapons fire. The tactical wire is usually positioned on the friendly side of the machine gun FPLs.

(3) Supporting obstacles are used to break up the pattern of tactical wire to prevent the enemy from locating friendly weapons.

c. Dead space obstacles are designed and built to restrict infantry movement in areas that cannot be observed and are protected from direct fires.

d. Antiarmor obstacles are restricted to streets (Figure C-2, page C-4).

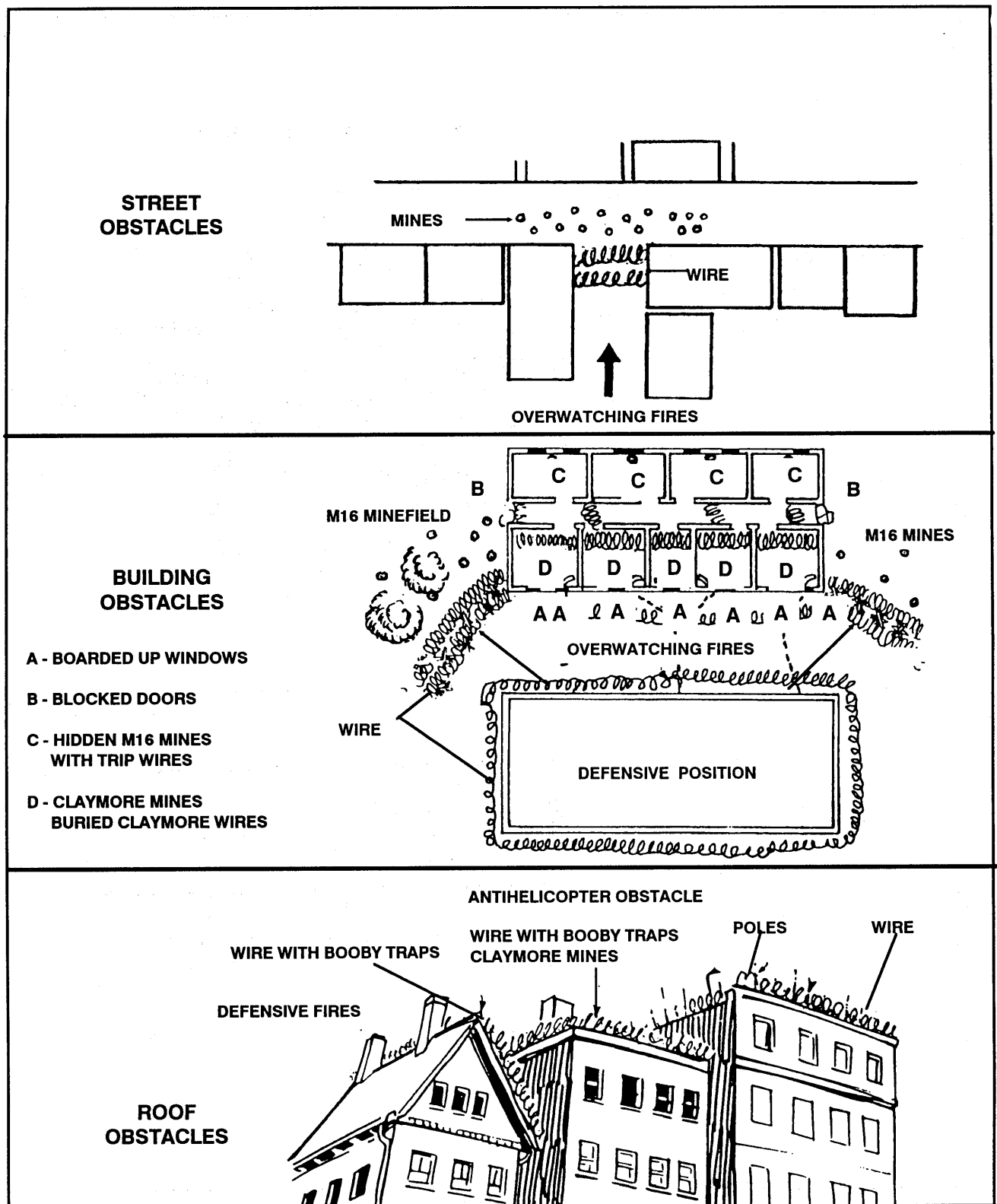


Figure C-1. Antipersonnel obstacles.

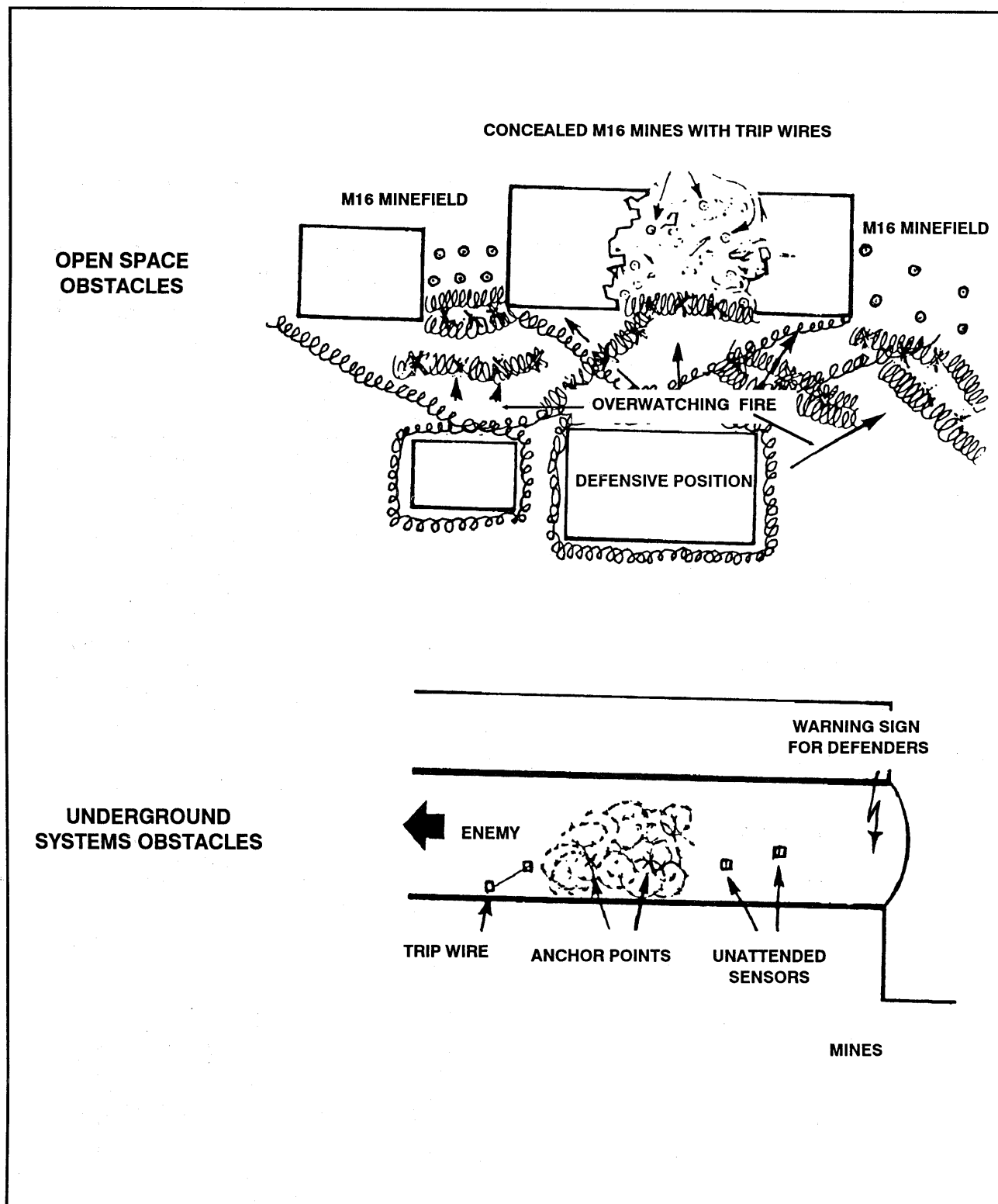


Figure C-1. Antipersonnel obstacles (continued).

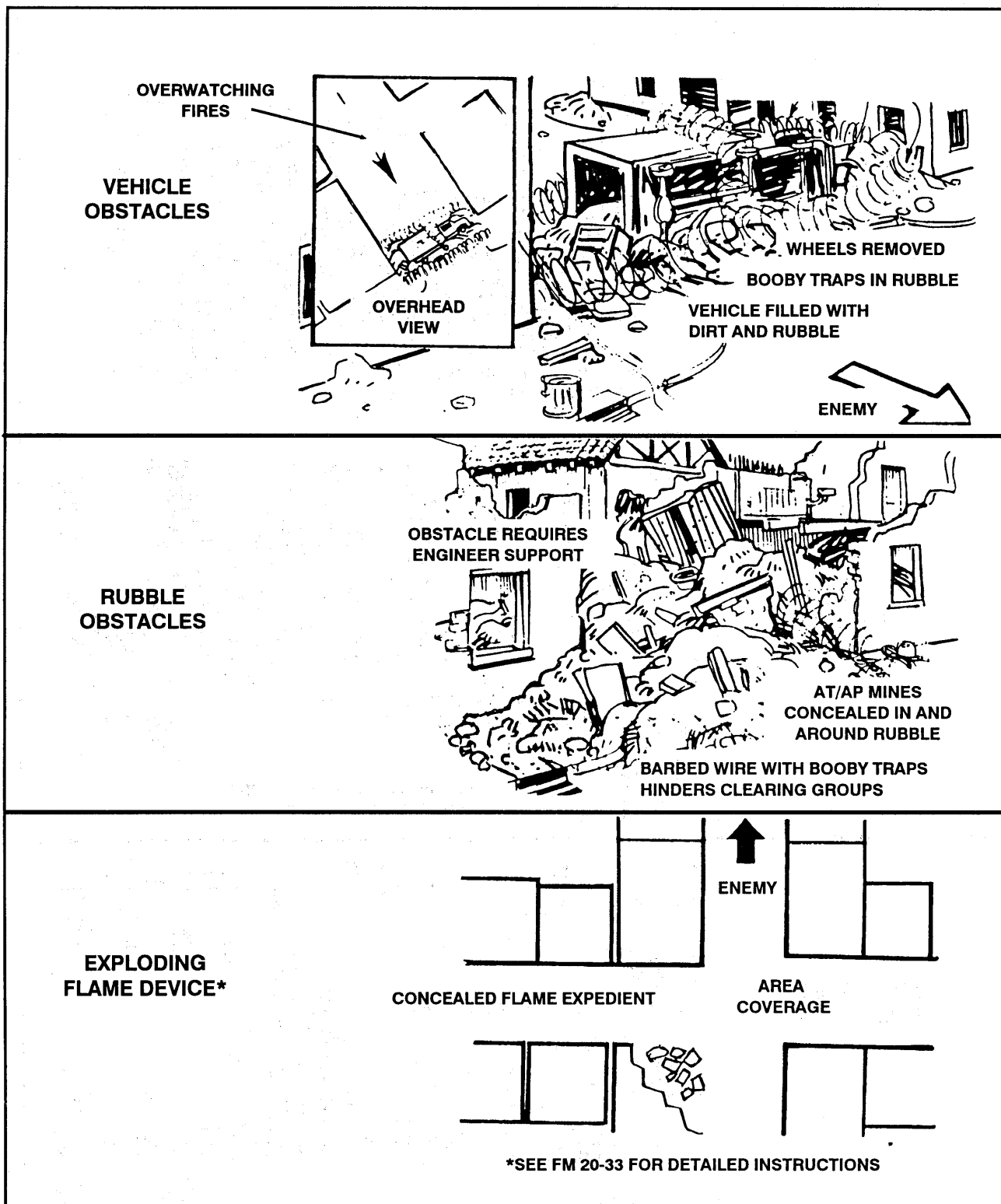
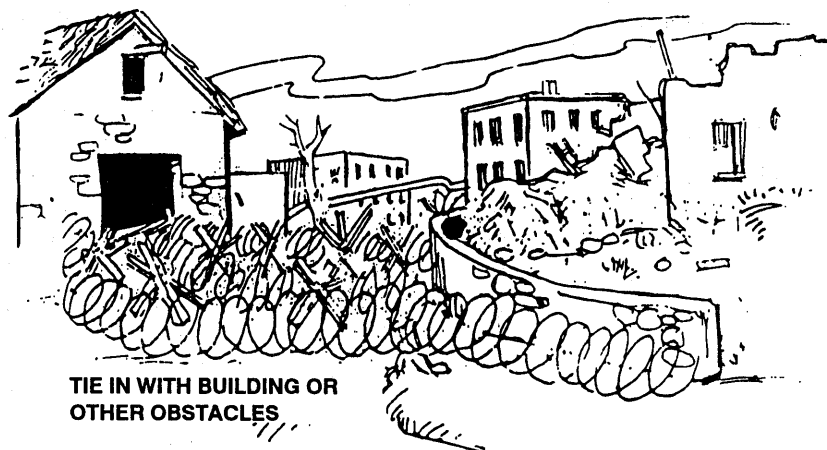


Figure C-2. Antiarmor obstacles.

**STEEL
HEDGEHOG**



**TIE IN WITH BUILDING OR
OTHER OBSTACLES**

**CRATERED
ROAD**

**SIZE OF CRATER MUST BE
LARGE ENOUGH TO PREVENT
BYPASS**



**AT/AP MINES ARE CONCEALED IN
RUBBLE AROUND CRATER**

**THIS OBSTACLE WILL REQUIRE
ENGINEER ASSISTANCE**

**CONCEALED
EXPLOSIVES**

EXPLOSIVE CONCEALED IN BUILDING

**REQUIRES ENGINEER
SUPPORT**



EXPLOSIVE CONCEALED IN SEWER

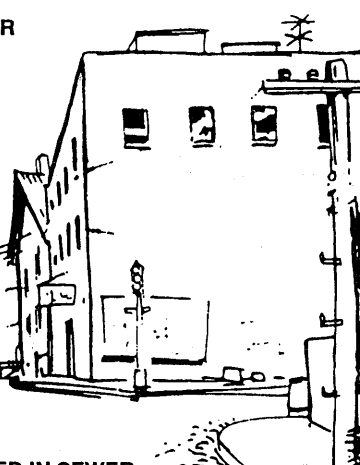


Figure C-2. Antiarmor obstacles (continued).

C-2. CONSTRUCTION OF OBSTACLES

Obstacles are constructed in buildings to deny enemy infantry covered routes and weapons positions close to friendly defensive positions. They can be constructed by rubbleing with explosives or flame, by using wire, or by using booby traps within buildings. The building can be prepared as an explosive or flame trap for execution after enemy occupation.

Section II. MINES

Mines in built-up areas should be recorded on a building sketch (Figure C-3) and on a DA Form 1355 or DA Form 1355-1-R. (See FM 20-32 for instructions on how to complete these forms.) The sketch should include the number of the building (taken from a city map) and all floor plans. It should also include the type of mine and firing device. When possible, mined buildings should be marked on the friendly side (Figure C-4). Clearing areas or buildings that have been mined is extremely difficult. Therefore, they should be considered "NO GO" areas. This factor must be carefully considered when planning and authorizing the placement of mines. (See Table C-1 for the approving authority for minefields.)

TYPE MINEFIELD	APPROVING AUTHORITY
Protective hasty	Brigade commander (may be delegated down to battalion or company level on a mission basis).
Deliberate	Division or installation commander.
Tactical	Division commander (may be delegated to brigade level).
Point	Brigade commander (may be delegated to battalion level).
Interdiction	Corps commander (may be delegated to division level).
Phony	Corps commander (may be delegated to division level).
Scatterable long duration (24 hours or more)	Corps commander (may be delegated to division or brigade level).
Short duration (less than 24 hours)	Corps commander (may be delegated to division , brigade, or battalion level).

Table C-1. Minefield employment authority.

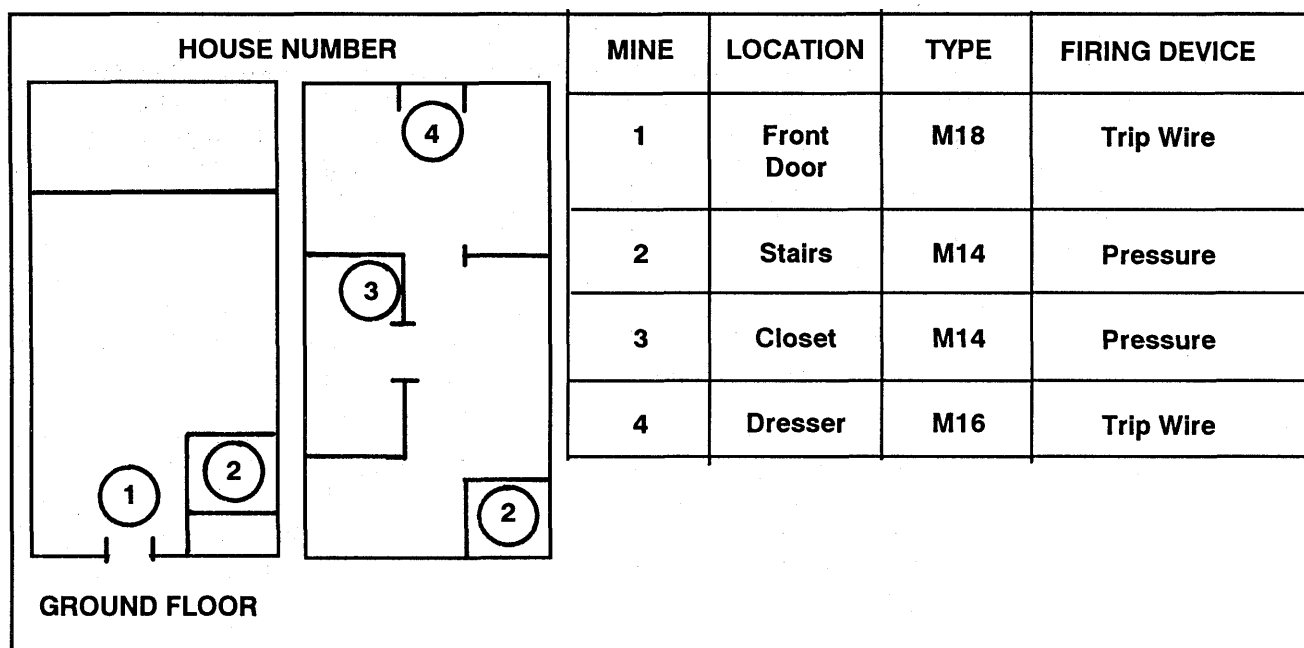


Figure C-3. Building sketch showing mines.

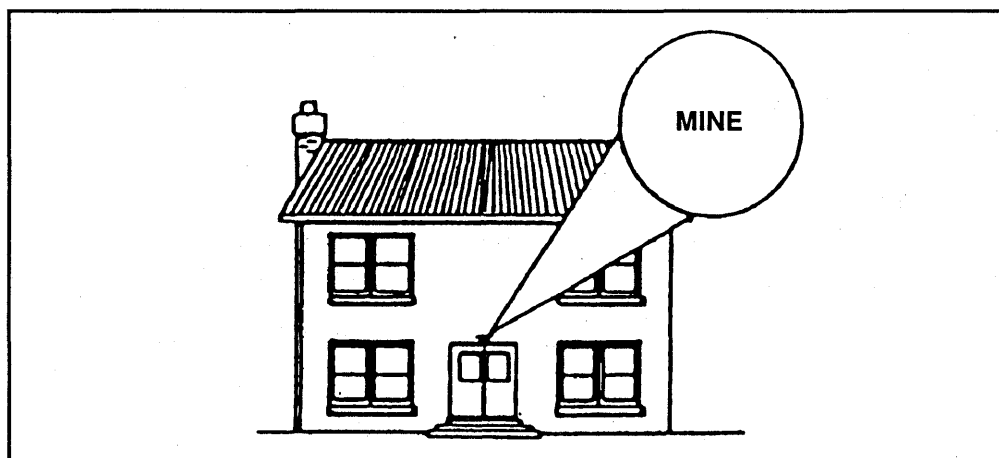


Figure C-4. Marking of mined buildings.

C-3. TYPES

Several types of mines can be employed in built-up areas.

a. The M14 mine should be used with metallic antipersonnel, antitank, or chemical mines to confuse and hinder enemy breaching attempts. It must be carefully employed because its light weight makes it easy to displace (Figure C-5, page C-8). However, its size makes it ideal for obscure places such as stairs and cellars.

b. The M16 mine is ideal for covering large areas such as rooftops, backyards, parks, and cellars. It should be expediently rigged for command detonation by attaching a rope or piece of communications wire to the release pin ring (Figure C-6, page C-8).

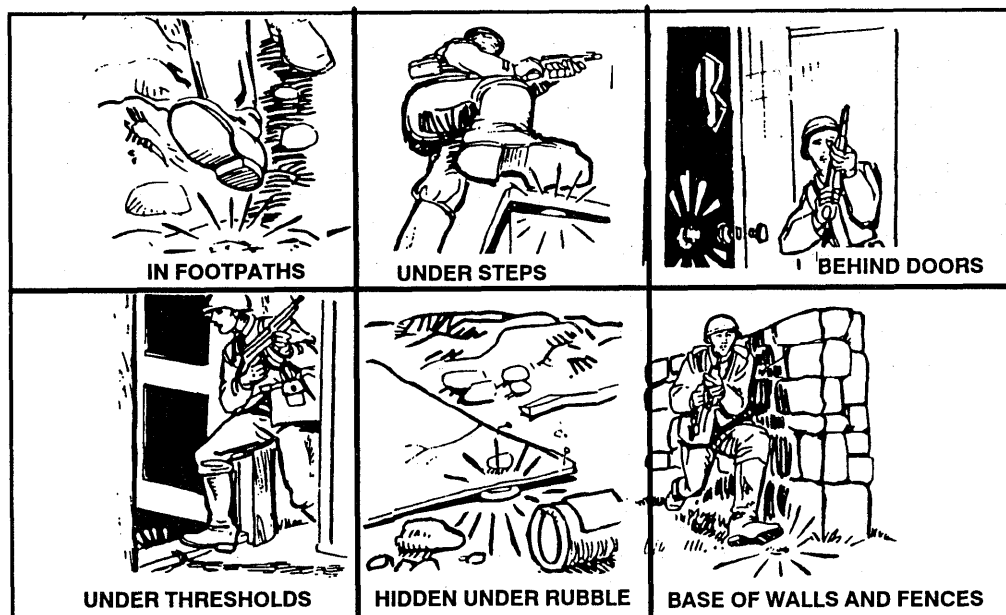


Figure C-5. Emplacing the M14 antipersonnel mine.

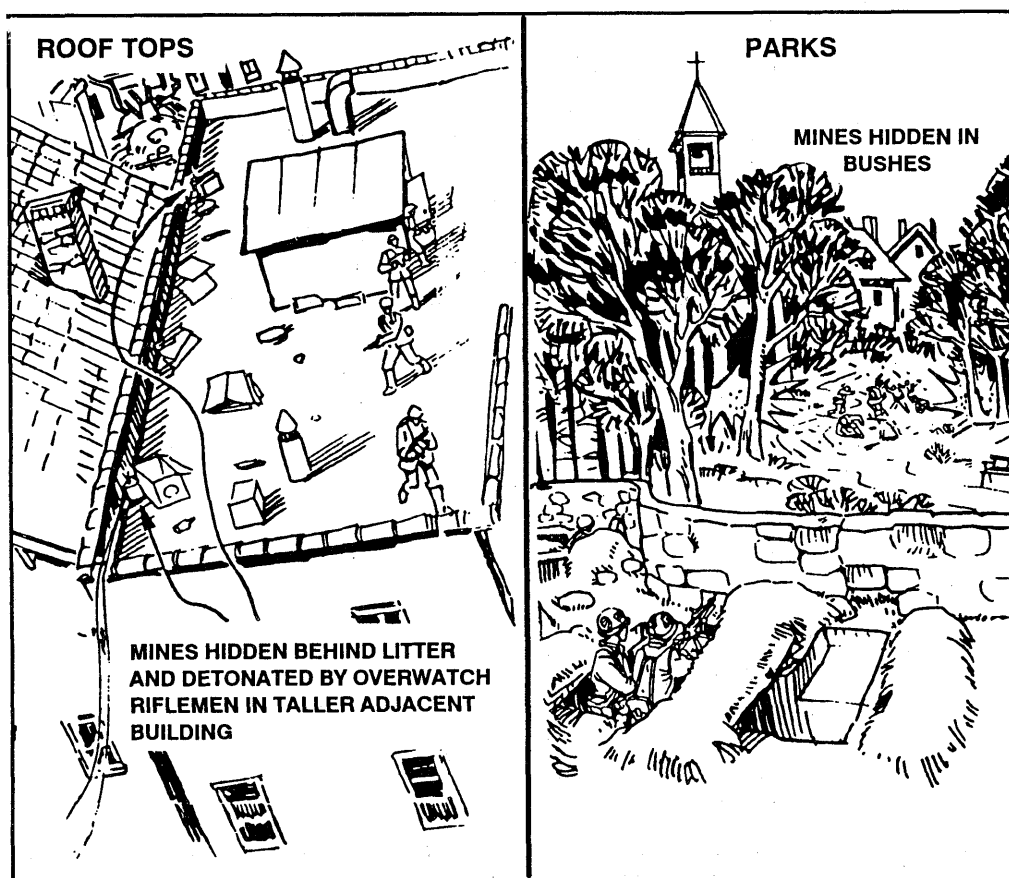


Figure C-6. Emplacements of M16 antipersonnel mines.

c. The M18A1 Claymore mine can be employed during the reorganization and consolidation phase on likely enemy avenues of approach. It does not have to be installed in the street but can be employed on the sides of buildings or any other sturdy structure.

(1) Claymore mines can be used for demolition against thin-skinned buildings and walls, or the 1 1/2 pounds of composition C4 can be removed from the mine and used as an explosive, if authorized.

(2) Claymore mines arranged for detonation by trip wire can be mixed with antipersonnel and antitank mines in nuisance minefields. They can fill the dead space in the final protective fires of automatic weapons (Figure C-7).

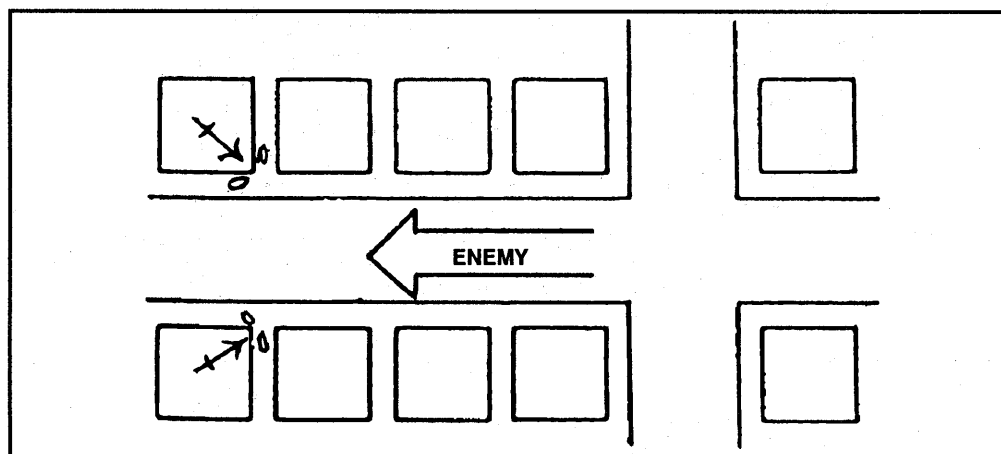


Figure C-7. Claymore mine used to cover dead space of automatic weapons.

(3) Claymore mines can be used several ways in the offense. For example, if friendly troops are advancing on a city, Claymore mines can be used in conjunction with blocking positions to cut off enemy avenues of escape (Figure C-8).

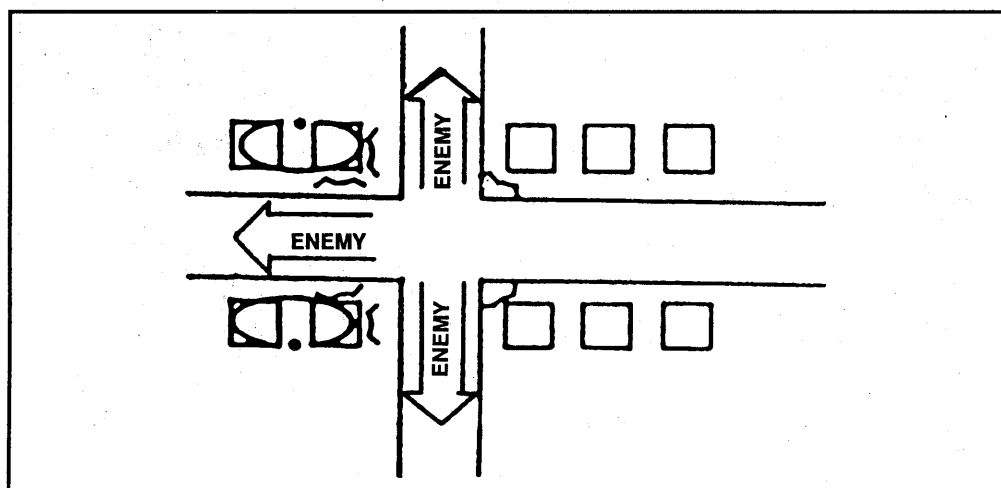


Figure C-8. Claymore mines used to block enemy avenues of escape.

- d. The M15, M19, and M21 antitank mines are employed (Figure C-9)—
- In conjunction with other man-made obstacles and covered with fire.
 - As standard minefields in large open areas with the aid of the M57 dispenser.
 - In streets or alleys to block routes of advance in narrow defiles.
 - As command detonated mines with other demolitions.

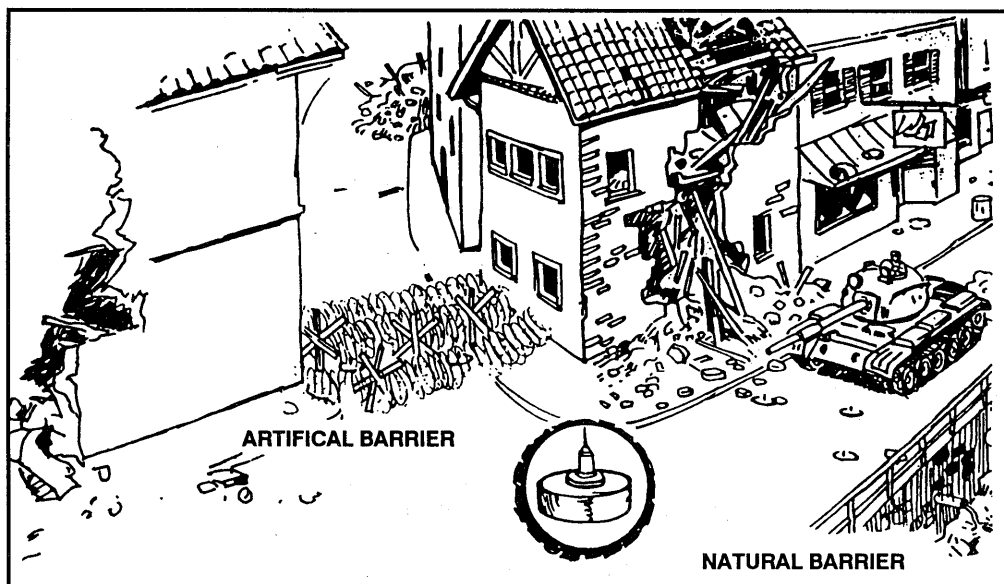


Figure C-9. Emplacement of antitank mines.

C-4. ENEMY MINES AND BOOBY TRAPS

Buildings contain many areas and items that are potential hiding places for booby traps—for example, doors, windows, telephones, stairs, books, canteens, and so on.

When moving through a building, soldiers must not pick up anything—food, valuables, enemy weapons, and so on. Such items could be rigged with pressure devices that explode when they are moved. Soldiers must be well dispersed so that if a booby trap explodes, the number of casualties will be few. Many different types of mines and booby traps could be encountered during combat in built-up areas (Figure C-10).

- a. The equipment used in clearing operations is—
- Mine detectors.
 - Probes.
 - Grappling hooks.
 - Ropes.
 - C4 explosives.
 - Flak vests.
 - Eye protection.
 - Engineer tape.

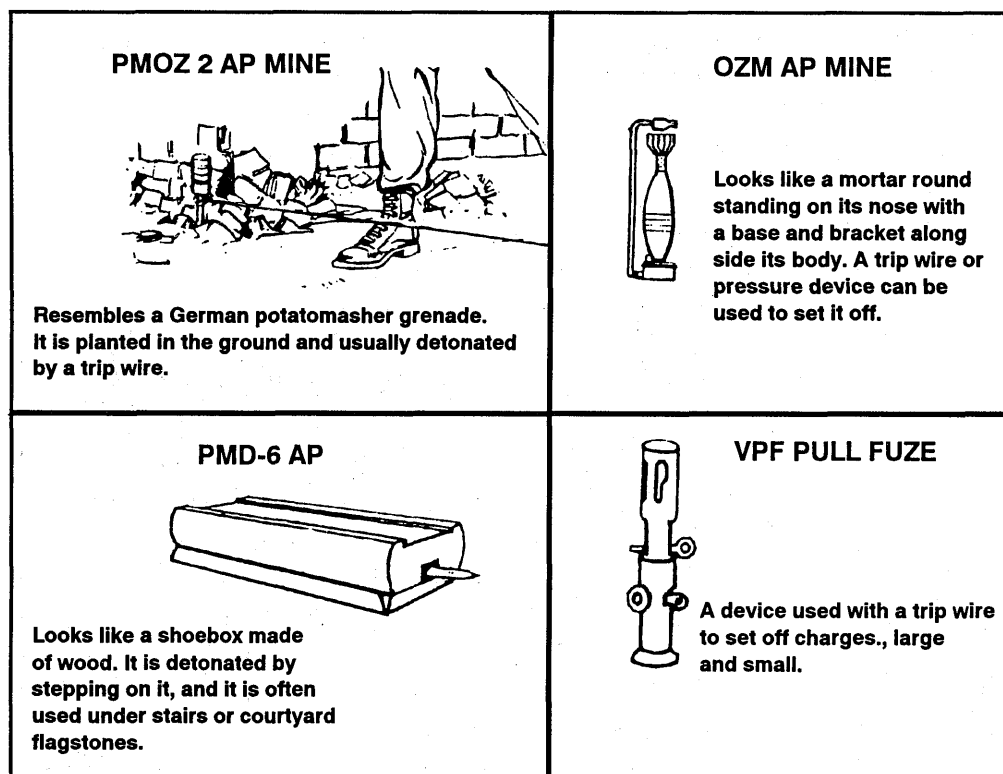


Figure C-10. Threat mines and booby traps.

b. If available, scout dogs should be used to “alert” soldiers to trip wires or mines.

c. To detect trip wires, soldiers can use a 10-foot pole with 5 feet of string tied on one end. He attaches a weight to the loose end of the string, which snaps on the trip wire. This allows the lead man to easily detect a trip wire (Figure C-11).

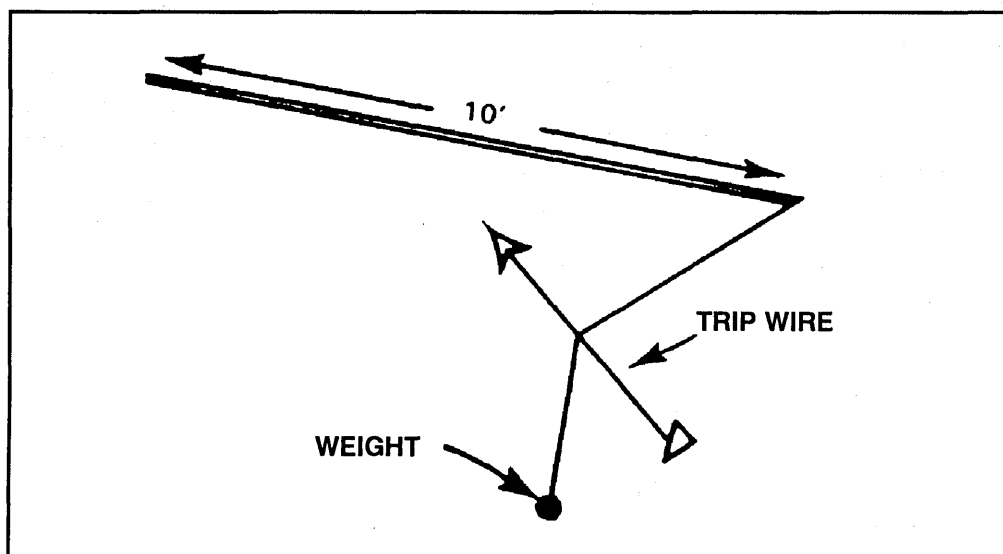


Figure C-11. Trip wire detection.

d. Many standard antipersonnel mines are packed in boxes and crates. If a soldier discovers explosive storage boxes, he should sketch them and turn the sketch over to the platoon leader or S2.

e. Most booby traps should be neutralized by explosive ordnance disposal (EOD) personnel. If EOD teams are not available, booby traps can be blown in place. Personnel should be protected by adequate cover. If the booby trap is in a building, all personnel should go outside before the booby trap is destroyed. Engineer tape placed around the danger area is one method of marking booby traps. If tape is not available, strips ripped from bedsheets can be used. If possible, a guide should lead personnel through booby-trapped areas. Prisoners and civilians can be a good source of information on where and how booby traps are employed. Figure C-10 shows some of the types of Threat mines and booby traps that could be encountered.

Section III. DEMOLITIONS

Demolitions are used more often during combat in built-up areas than during operations in open natural terrain. Demolition operations should be enforced by the engineers that support the brigade, battalion task force, and company team. However, if engineers are involved in the preparation and execution of the barrier plan, infantrymen can prepare mouseholes, breach walls, and rubble buildings themselves, assisted and advised by the brigade, task force, or team engineer.

C-5. OFFENSIVE USE

When assaulting or clearing a built-up area, demolitions enable the maneuver commander to create an avenue of approach through buildings. As discussed earlier in the text, the infantry commander forms his personnel into assault teams and overwatch teams for seizing and clearing buildings.

a. Every other man in an assault team should carry demolitions, and other selected personnel should carry blasting caps. In a fire team, one man should carry the demolitions. The same man should not carry both the explosives and the blasting caps. As the demolitions are expended by the assault teams, they should be replaced by explosives carried by the overwatch force.

b. One of the most difficult breaching operations faced by the assault team is the breaching of masonry and reinforced concrete walls. When demolitions must be used, composition C4 is the ideal charge to use. Normally, building walls are 15 inches thick or less. Assuming that all outer walls are constructed of reinforced concrete, a rule of thumb for breaching is to place 10 pounds of C4 against the target between waist and chest height. When detonated, this normally blows a hole large enough for a man to go through. The amounts of TNT required to breach concrete are shown in Figure C-12.

c. However, metal reinforcing rods cannot be cut by this charge. Once exposed, they can be removed by using saddle or diamond charges on the rods. Hand grenades should be thrown into the opening to clear the area of enemy (see FM 5-25, Chapter 3).

REINFORCED CONCRETE		
THICKNESS OF MATERIAL	TNT	SIZE OF OPENING
Up to 10 CM (4 inches)	5 KG (11 lbs)	10 to 15 CM (4 to 6 inches)
10 to 15 CM (4 to 6 inches)	10 KG (22 lbs)	15 to 25 CM (6 to 10 inches)
15 to 20 CM (6 to 8 inches)	20 KG (44 lbs)	20 to 30 CM (8 to 12 inches)
NONREINFORCED CONCRETE MASONRY		
THICKNESS OF MATERIAL	TNT	SIZE OF OPENING
Up to 35 CM (14 inches)	1 KG (2.2 lbs)	35 CM (14 inches)
35 to 45 CM (14 to 18 inches)	2 KG (4.4 lbs)	45 CM (18 inches)
45 to 50 CM (18 to 20 inches)	3 KG (6.6 lbs)	50 CM (20 inches)

Figure C-12. TNT required to breach concrete.

d. Mouseholes provide the safest method of moving between rooms and floors. They can be created with C4. Since C4 comes packaged with an adhesive backing or can be emplaced using pressure-sensitive tape, it is ideal for this purpose. When using C4 to blow a mousehole in a lath and plaster wall, one block or a strip of blocks should be placed on the wall from neck-to-knee height. Charges should be primed with detonating cord or electrical blasting caps to obtain simultaneous detonation, which will blow a hole large enough for a man to fit through.

C-6. DEFENSIVE USE

The use of demolitions in defensive operations is the same as in offensive operations. When defending a built-up area, demolitions are used to create covered and concealed routes through walls and buildings that can be used for withdrawals, reinforcements, or counterattacks. Demolitions are also used to create obstacles and clear fields of fire.

a. Infantrymen use demolitions for creating mouseholes and constructing command-detonated mines. Expedient C4 satchel charges can be concealed in likely enemy weapons, in firing positions, or on movement routes. Expedient-shaped charges (effective against lightly armored vehicles) can also be emplaced on routes of mounted movement when integrated into antiarmor ambushes.

b. The engineers must furnish technical assistance for selective rubbleing. Normally, buildings can be rubbleed by using shaped charges or C4 on the supports and major beams of buildings.

c. Charges should be placed directly against the surface that is to be breached (Figure C-12), unless a shaped charge is used. Whenever possible, demolitions should be tamped to increase their effectiveness. Tamping materials could be sandbags, rubble, or desks and chairs (Figure C-13).

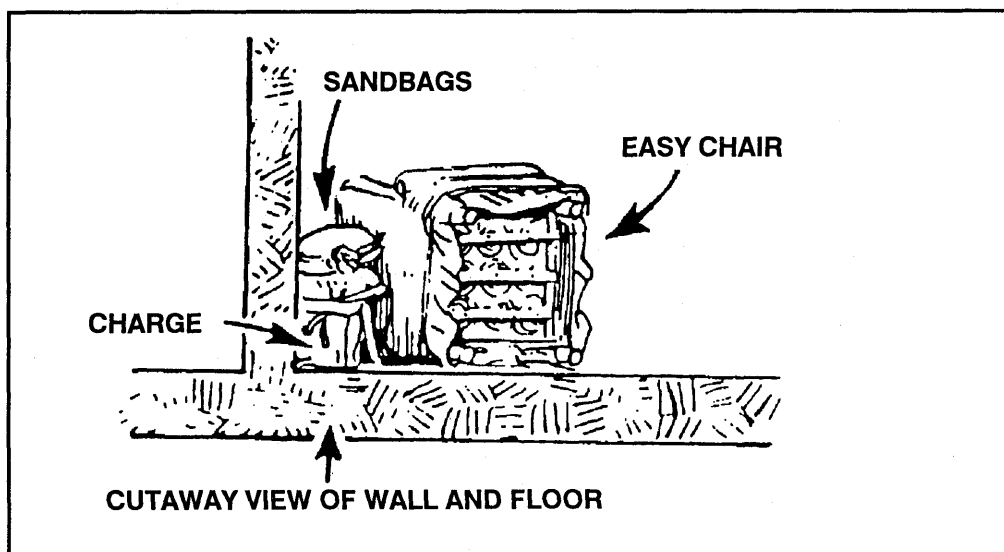


Figure C-13. Chair used to tamp breaching charge.

d. For most exterior walls, tamping of breaching charges could be impossible due to enemy fire. Thus, the untamped charge requires twice the explosive charge to produce the same effect as an elevated charge (Figure C-14).

METHODS OF PLACEMENT				
THICKNESS OF CONCRETE				
FEET	POUNDS OF TNT	POUNDS OF C4	POUNDS OF TNT	POUNDS OF C4
2	14	11	28	21
2 1/2	27	21	54	41
3	39	30	78	59
3 1/2	62	47	124	93
4	93	70	185	138
4 1/2	132	99	263	196
5	147	106	284	211
5 1/2	189	141	376	282
6	245	186	490	366

Figure C-14. Breaching reinforced concrete.

e. When enemy fire prevents an approach to the wall, the breaching charge must be attached to a pole and slid into position for detonation at the base of the wall untamped (Figure C-15). Small-arms fire will not detonate C4 or TNT; the charge must be primed with detonating cord. Soldiers must take cover before detonating the charge.

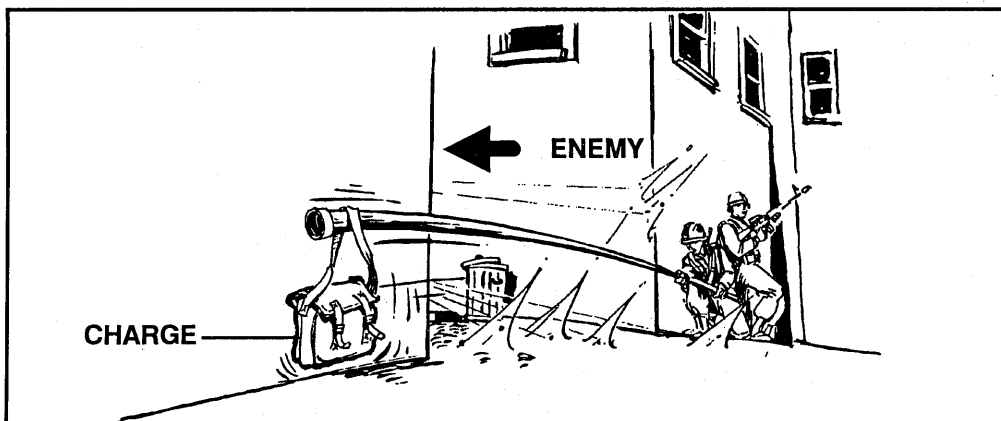


Figure C-15. Charge placement when small-arms fire cannot be suppressed.

f. The internal walls of most buildings function as partitions rather than load-bearing members. Therefore, smaller explosive charges can be used to breach them. In the absence of C4 or other military explosives, internal walls can be breached by using one or more hand grenades or a Claymore mine (Figure C-16). These devices should be tamped to increase their effectiveness and to reduce the amount of explosive force directed to the rear.

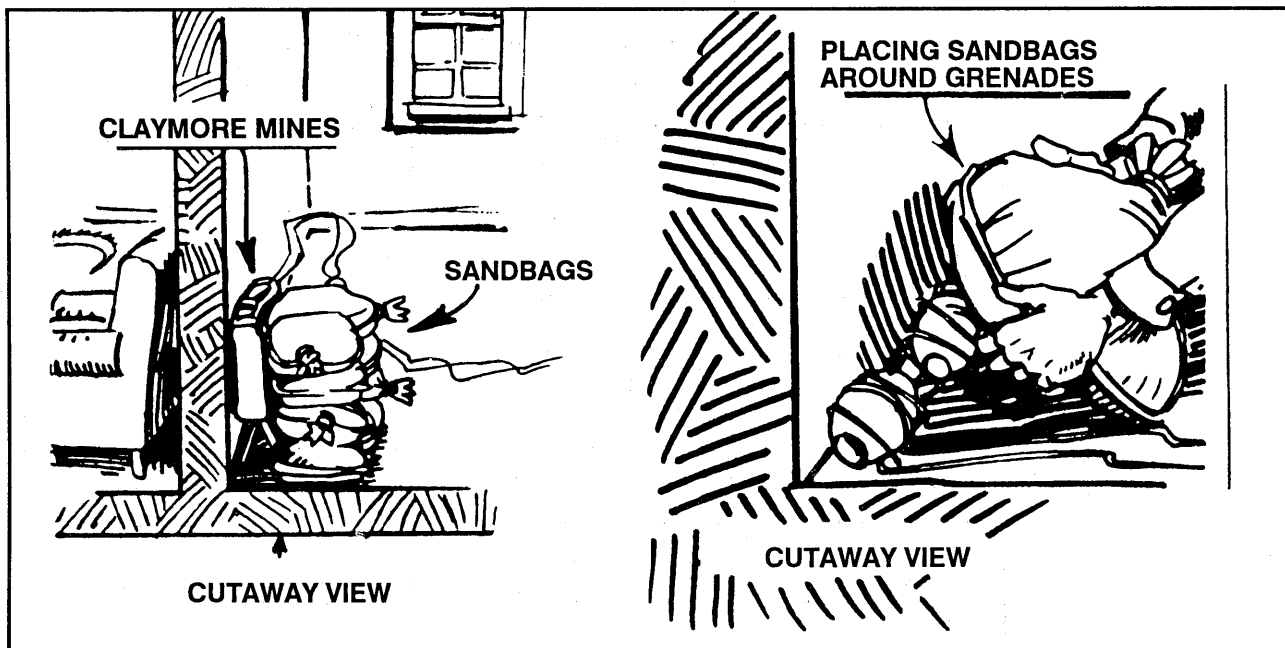


Figure C-16. Tamping of a Claymore mine and hand grenades to breach internal walls.

g. The Molotov cocktail (Figure C-17) is an expedient device for disabling both wheeled and tracked vehicles. It is easy to make since the materials are readily available. The results are most effective because of the close engagement in built-up areas. The objective is to ignite a flammable portion of the vehicle such as the fuel or ammunition that it is transporting. The following materials are needed to make a Molotov cocktail:

- Container-bottle or glass container.
- Gas (60 percent).
- Oil (40 percent).
- Rag for use as a wick.

The gas and oil are mixed thoroughly (60 percent gas to 40 percent oil). The rag is soaked with the mixture, and then the mixture is placed into the bottle. The rag is then inserted in the opening of the bottle as a wick. When a target is sighted, the wick is lit and the bottle is thrown hard enough to break.

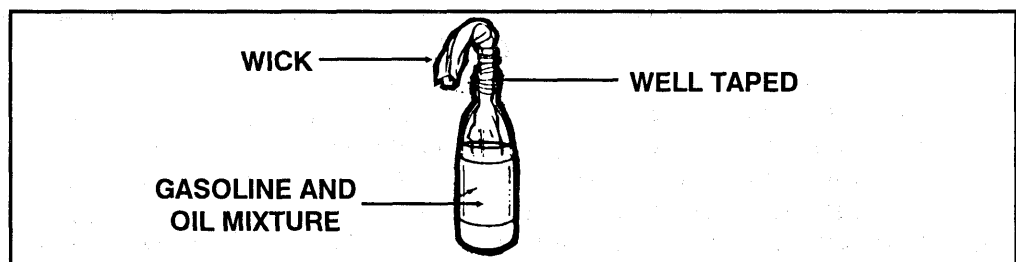


Figure C-17. Molotov cocktail.

WARNING

Ensure that a safe distance is maintained when throwing the Molotov cocktail. Caution troops against dropping the device. Throw it in the opposite direction of personnel and flammable materials. Do not smoke while making this device.

h. The bunker bomb (Figure C-18) is an expedient explosive flame weapon best used against fortified positions or rooms. This expedient munition should be used with a mechanical rather than an electrical firing system. The following materials are required to make a bunker bomb:

- 1 small-arms ammunition container.
- 1 gallon of gasoline.
- 50 feet of detonating cord.
- 1 nonelectric blasting cap.
- 1 M60 fuse igniter.
- 7 1/2 feet of M700 time fuse.
- 3 ounces of M4 thickening compound.
- 1 M49 trip flare or M34 WP grenade.

(1) **Step 1.** Fill the ammunition can 3/4 full with thickened flame fuel and secure the lid.

(2) **Step 2.** "Hasty whip" the device with 15 turns around the center of the container using 44 feet of detonating cord. Leave 2-foot "pigtails" for attaching the igniter and fuse igniter.

(3) **Step 3.** Tape the igniter (M49 trip flare or M34 WP grenade) to the container handle.

(4) **Step 4.** Place one detonating cord pigtail end under the igniter spoon handle. Tape it in place.

(5) **Step 5.** Attach the M60 fuse igniter and the nonelectrical blasting cap to the M700 time fuse.

(6) **Step 6.** Attach the nonelectrical firing system to the other pigtail by making a loop in the detonating cord and attaching the blasting cap to it.

(7) **Step 7.** Remove the safety pin from the igniter (M49 trip flare or M34 WP grenade). The device is ready to be fired.

WARNING

Never carry the device by the handle or igniter. Remove the igniter safety pin only when it is time to use the device. Use extreme care when handling or carrying nonelectrical firing systems. Protect blasting caps from shock and extreme heat. Do not allow the time fuse to kink or become knotted. Doing so may disrupt the powder train and may cause a misfire. Prime detonating cord and remove the time fuse igniter safety pin only when it is time to use the device.

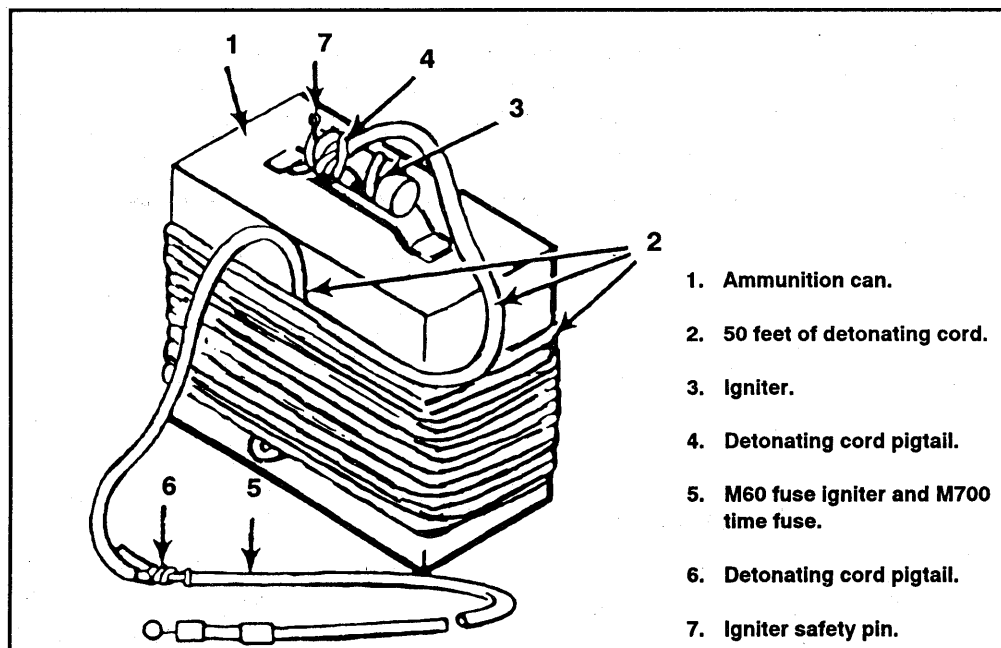


Figure C-18. Bunker bomb made from an ammunition can.

C-7. SAFETY

The greatest danger to friendly personnel from demolitions is the debris thrown by the explosion. Leaders must ensure that protective measures are enforced. The safe distance listed in Table C-2 indicates the danger of demolition effects.

a. The following are the rules for using demolitions:

- Keep the blasting machine under the control of an NCO.
- Wear helmets at all times while firing explosives.
- Handle misfires with extreme care.
- Clear the room and protect personnel when blowing interior walls.

b. Some charges should be prepared, minus detonators, beforehand to save time—for example, 10- or 20-pound breaching charges of C4, expedient-shaped charges in No. 10 cans.

- Use C4 to breach hard targets (masonry construction).
- Do not take chances.
- Do not divide responsibility for explosive work.
- Do not mix explosives and detonators.
- Do not carry explosives and caps together.

POUNDS OF EXPLOSIVE	SAFE DISTANCE IN METERS	POUNDS OF EXPLOSIVE	SAFE DISTANCE IN METERS
1 to 29	300	150	514
30	311	175	560
35	327	200	585
40	342	225	609
45	356	250	630
50	369	275	651
60	392	300	670
70	413	325	688
80	431	350	705
90	449	375	722
100	465	400	737
125	500	425 and over	750
NOTE: These distances will be modified in combat when troops are in other buildings, around corners, or behind intervening walls.			

Table C-2. Minimum safe distances for personnel in the open.

APPENDIX D

SUBTERRANEAN OPERATIONS

Knowledge of the nature and location of underground facilities is of great value to both the urban attacker and defender. To exploit the advantages of underground facilities, a thorough reconnaissance is required. This appendix describes the techniques used to deny the enemy use of these features, the tactical value of subterranean passage techniques, and the psychological aspects of extended operations in subterranean passages.

D-1. TACTICAL VALUE

In larger cities, subterranean features include sunken garages, underground passages, subway lines, utility tunnels (Figure D-1), sewers, and storm drains. Most of these features allow the movement of many troops. Even in smaller European towns, sewers and storm drains permit soldiers to move beneath the fighting and surface behind the enemy.

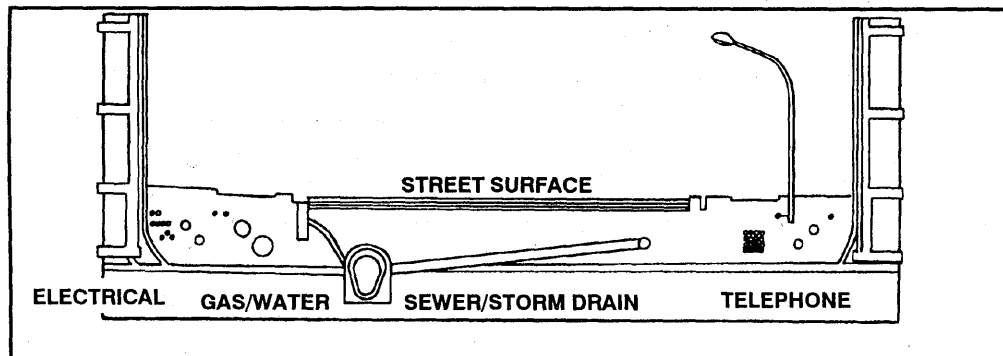


Figure D-1. Tunnels.

a. Subterranean passages provide the attacker with covered and concealed routes into and through built-up areas. This enables the enemy to launch his attack along roads that lead into the city while infiltrating a smaller force in the defender's rear. The objective of this attack is to quickly insert a unit into the defenders rear, thereby, disrupting his defense and obstructing the avenues of withdrawal for his forward defense.

b. Depending upon the strength and depth of the defense, the attack along the subterranean avenue of approach could easily become the main attack. Even if the subterranean effort is not immediately successful, it forces the defender to fight on two levels and to extend his resources to more than just street-level fighting.

c. The existence of subterranean passages forces the defender to defend the built-up area above and below ground. Passages are more of a disadvantage to the defender than the attacker. However, subterranean passages also offer some advantages. When thoroughly reconnoitered and controlled by the defender, subterranean passages provide excellent covered and concealed routes to move reinforcements or to launch counterattacks. They also provide ready-made lines of communication for the movement of supplies and evacuation of casualties, and provide places to cache supplies for

forward companies. Subterranean passages also offer the defender a ready-made conduit for communications wire, which protects it from tracked vehicles and indirect fires.

D-2. DENIAL TO THE ENEMY

Subterranean passages are useful to the defender only to the extent that the attacker can be denied their use. The defender has an advantage in that, given the confining, dark environment of these passages, a small group of determined soldiers in a prepared position can defeat a numerically superior force.

a. Tunnels afford the attacker little cover and concealment except for the darkness and any man-made barriers. The passageways provide tight fields of fire and amplify the effect of grenades. Obstacles at intersections in the tunnels set up excellent ambush sites and turn the subterranean passages into a deadly maze. These obstacles can be quickly created using chunks of rubble, furniture, and parts of abandoned vehicles interspersed with M18A1 Claymore mines.

b. A thorough reconnaissance of the subterranean or sewer system must be made first. To be effective, obstacles must be located at critical intersections in the passage network so that they trap attackers in a kill zone but allow defenders freedom of movement (Figure D-2).

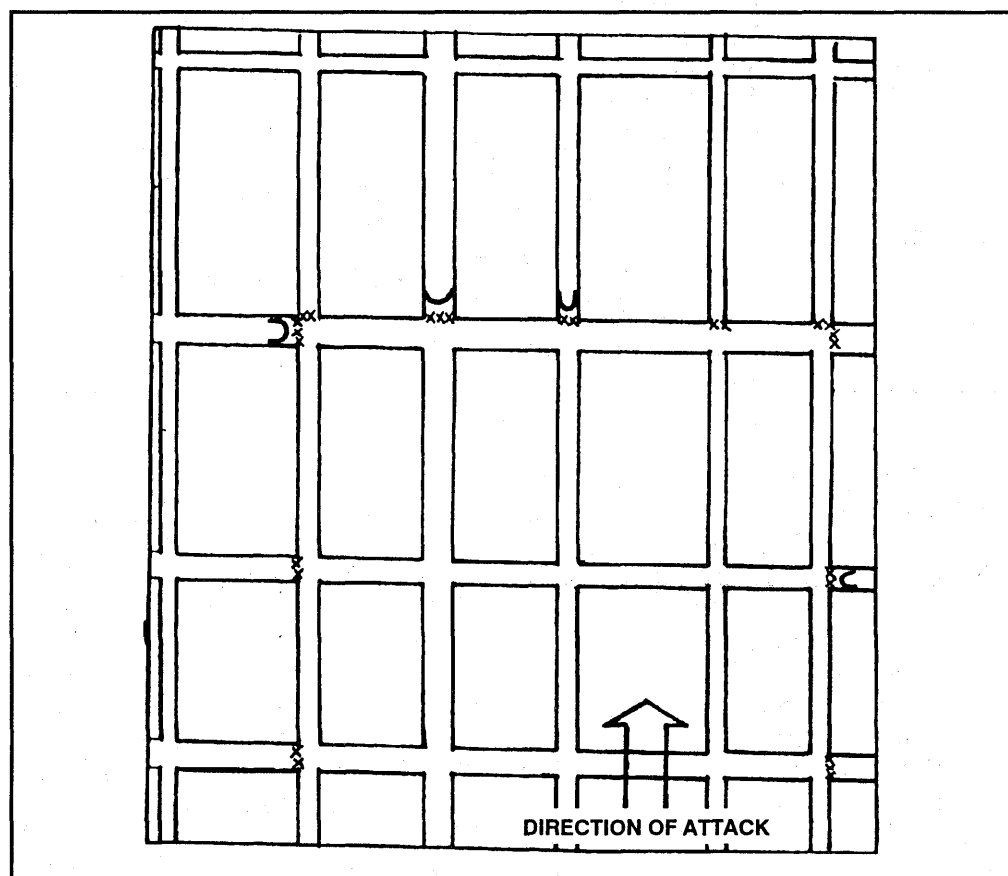


Figure D-2. Defense of a sewer system.

D-3. SUBTERRANEAN RECONNAISSANCE TECHNIQUES

The local reconnaissance mission (platoon or company area of responsibility) should be given to a squad-size element (six or seven personnel). Enough soldiers are in a squad to gather the required data without getting in each other's way in the confines of the tunnel. Only in extremely large subterranean features should the size of a patrol be increased.

a. The patrol unit leader should organize his patrol with two riflemen—one tasked with security to the front (the point man) and one tasked with security to the rear (Figure D-3). The patrol leader moves directly behind the point man, and navigates and records data collected by the patrol. The grenadier should follow the patrol unit leader, and the demolitions man should follow the grenadier. Two riflemen should be left as a security post at the point of entry. They are responsible for detecting enemy who come upon the patrol unit's rear and for serving as the communications link between the patrol unit leader and his higher headquarters.

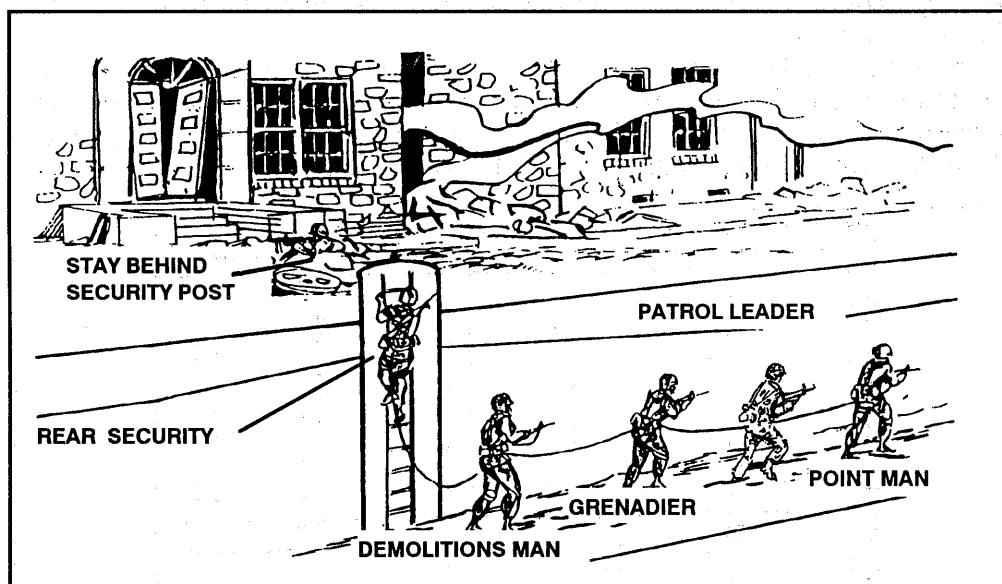


Figure D-3. Organization of the patrol unit.

b. The patrol unit leader should carry a map, compass, street plan, and notebook in which he has written the information he must gather for the platoon leader. The grenadier should carry the tools needed to open manhole covers. If the patrol is to move more than 200 to 300 meters or if the platoon leader directs, the grenadier should also carry a sound-powered telephone (TA-1) and wire dispenser (XM-306A) for communications. (Radios are unreliable in this environment). The point man should be equipped with night vision goggles to maintain surveillance within the sewer.

c. All soldiers entering the sewer should carry a sketch of the sewer system to include magnetic north, azimuths, distances, and manholes. They should also carry protective masks, flashlights, gloves, and chalk for marking features along the route. The patrol should also be equipped with a 120-foot safety rope to which each man is tied. To improve their footing in slippery sewers and storm drains, the members of the patrol unit should wrap chicken wire or screen wire around their boots.

d. A constant concern to troops conducting a subterranean patrol is chemical defense. Enemy chemical agents used in tunnels are encountered in dense concentrations, with no chance of dispersement. The M8 automatic chemical agent alarm system, carried by the point man, provides instant warning of the presence of chemical agents. M8 detector paper can also be used to detect chemical agents. At the first indication that harmful gases are present, the patrol should mask.

e. In addition to enemy chemical agents, noxious gases from decomposing sewage can also pose a threat. These gases are not detected by the M8 chemical agent alarm system, nor are they completely filtered by the protective mask. Physical signs that indicate their presence in harmful quantities are nausea and dizziness. The patrol leader should be constantly alert to these signs and know the shortest route to the surface for fresh air.

f. Once the patrol is organized and equipped, it moves to the entrance of the tunnel, which is usually a manhole. With the manhole cover removed, the patrol waits 15 minutes before entry to allow any gases to dissipate. Then the point man descends into the tunnel to determine whether the air is safe to breathe and if movement is restricted. The point man should remain in the tunnel for 10 minutes before the rest of the patrol follows. If he becomes ill or is exposed to danger, he can be pulled out by the safety rope.

g. When the patrol is moving through the tunnel, the point man moves about 10 meters in front of the patrol leader. Other patrol members maintain 5-meter intervals. If the water in the tunnel is flowing faster than 2.5 meters per second or if the sewer contains slippery obstacles, those intervals should be increased to prevent all patrol members from falling if one man slips. All patrol members should stay tied into the safety rope so that they can easily be retrieved from danger. The rear security man marks the route with chalk so other troops can find the patrol.

h. The patrol leader should note the azimuth and pace count of each turn he takes in the tunnel. When he encounters a manhole to the surface, the point man should open it and determine the location, which the patrol leader then records. The use of recognition signals (Figure D-4) prevents friendly troops from accidentally shooting the point man as he appears at a manhole.

i. Once the patrol has returned and submitted its report, the platoon leader must decide how to use the tunnel. In the offense, the tunnel could provide a covered route to move behind the enemy's defenses. In the defense, the tunnel could provide a covered passage between positions. In either case, the patrol unit members should act as guides along the route.

j. If the tunnel is to be blocked, the platoon should emplace concertina wire, early warning devices, and antipersonnel mines. A two-man position established at the entrance of the sewer (Figure D-5) provides security against enemy trying to approach the platoon's defense and should be abandoned when the water rises. It should be equipped with command-detonated illumination. While listening for the enemy, soldiers manning this position should not wear earplugs (they should be put in ears just before firing). The confined space amplifies the sounds of weapons firing to a dangerous level. The overpressure from grenades, mines, and booby traps exploding in a sewer or tunnel can have adverse effects on friendly troops such as ruptured eardrums and wounds from flying debris. Also, gases found in sewers can be ignited by the blast effects of these munitions. For these

reasons, small-arms weapons should be employed in tunnels and sewers. Friendly personnel should be outside of tunnels or out of range of the effects when mines or demolitions are detonated. Soldiers should mask at the first sign of a chemical threat.



Figure D-4. Recognition signals.

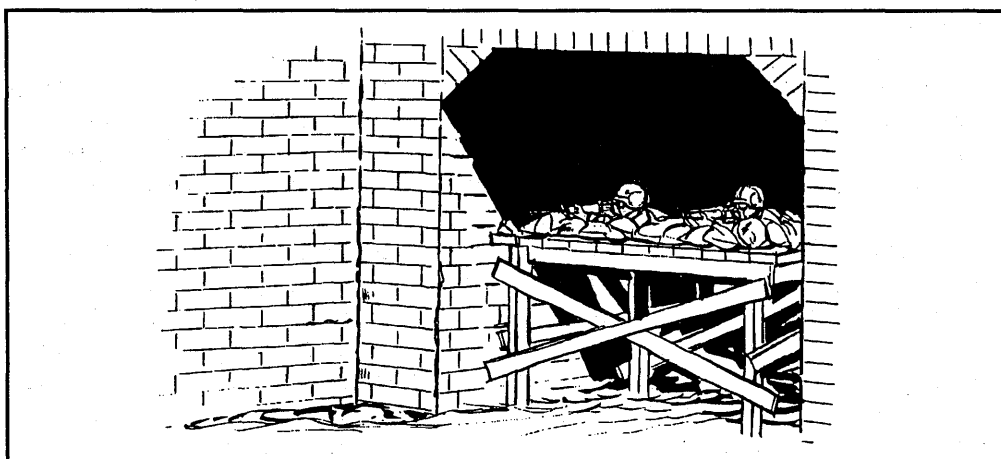


Figure D-5. Two-man position established at the entrance to a sewer.

D-4. PSYCHOLOGICAL CONSIDERATIONS

Combat operations in subterranean passages are much like night combat operations. The psychological factors that affect soldiers during night operations reduce confidence, cause fear, and increase a feeling of isolation. This feeling of isolation is further magnified by the tight confines of the tunnels. The layout of tunnels could require greater dispersion between positions than is usual for operations in wooded terrain.

a. Leaders must enforce measures to dispel the feelings of fear and isolation experienced by soldiers in tunnels. These measures include leadership training, physical and mental fitness, sleep discipline, and stress management.

b. Leaders maintain communication with soldiers manning positions in the tunnels either by personal visits or by field telephone. Communications inform leaders of the tactical situation as well as the mental state of their soldiers. Training during combat operations is limited; however, soldiers manning positions below ground should be given as much information as possible on the organization of the tunnels and the importance of the mission. They should be briefed on contingency plans and alternate positions should their primary positions become untenable.

c. Physical and mental fitness can be maintained by periodically rotating soldiers out of tunnels so they can stand and walk in fresh air and sunlight. Stress management is also a factor of operations in tunnels. Historically, combat in built-up areas has been one of the most stressful forms of combat. Continuous darkness and restricted maneuver space cause more stress to soldiers than street fighting.

APPENDIX E

FIGHTING POSITIONS

A critical platoon- and squad-level defensive task in combat in built-up areas is the preparation of fighting positions. Fighting positions in built-up areas are usually constructed inside buildings and are selected based on an analysis of the area in which the building is located and the individual characteristics of the building.

E-1. CONSIDERATIONS

Leaders should consider the following factors when establishing fighting positions.

a. **Protection.** Leaders should select buildings that provide protection from direct and indirect fires. Reinforced concrete buildings with three or more floors provide suitable protection, while buildings constructed of wood, paneling, or other light material must be reinforced to gain sufficient protection. One- to two-story buildings without a strongly constructed cellar are vulnerable to indirect fires and require construction of overhead protection for each firing position.

b. **Dispersion.** A position should not be established in a single building when it is possible to occupy two or more buildings that permit mutually supporting fires. A position in one building, without mutual support, is vulnerable to bypass, isolation, and subsequent destruction from any direction.

c. **Concealment.** Buildings that are obvious defensive positions (easily targeted by the enemy) should not be selected. Requirements for security and fields of fire could require the occupation of exposed buildings. Therefore, reinforcements provide suitable protection within the building.

d. **Fields of Fire.** To prevent isolation, positions should be mutually supporting and have fields of fire in all directions. Clearing fields of fire could require the destruction of adjacent buildings using explosives, engineer equipment, and field expedients.

e. **Covered Routes.** Defensive positions should have at least one covered route that permits resupply, medical evacuation, reinforcement, or withdrawal from the building. The route can be established by one of the following:

- Through walls to adjacent buildings.
- Through underground systems.
- Through communications trenches.
- Behind protective buildings.

f. **Observation.** The building should permit observation of enemy avenues of approach and adjacent defensive sectors.

g. **Fire Hazard.** Leaders should avoid selecting positions in buildings that are a fire hazard. If flammable structures must be occupied, the danger of fire can be reduced by wetting down the immediate environment, laying an inch of sand on the floors, and providing fire extinguishers and fire fighting equipment. Also, routes of escape must be prepared in case of fire.

h. **Time.** Time available to prepare the defense could be the most critical factor. If enough time is not available, buildings that require extensive preparation should not be used. Conversely, buildings located in less desirable areas that require little improvement could probably become the centers of defense.

E-2. PREPARATION

Preparation of fighting positions depends upon proper selection and construction.

a. **Selecting Positions.** Each weapon should be assigned a primary sector of fire to cover enemy approaches. Alternate positions that overwatch the primary sector should also be selected. These positions are usually located in an adjacent room on the same floor. Each weapon must be assigned a supplementary position to engage attacks from other directions, and an FPL (Figure E-1).

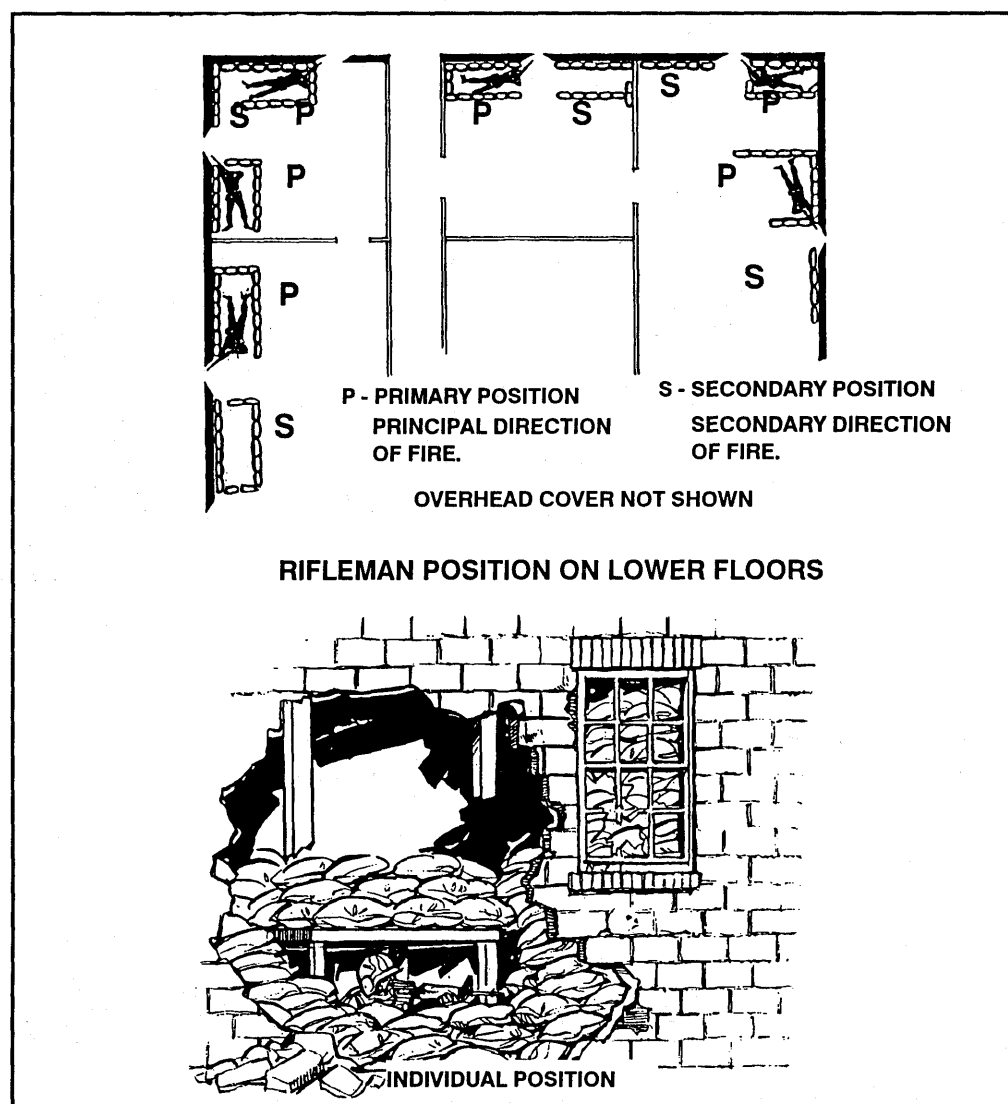


Figure E-1. Weapon positions.

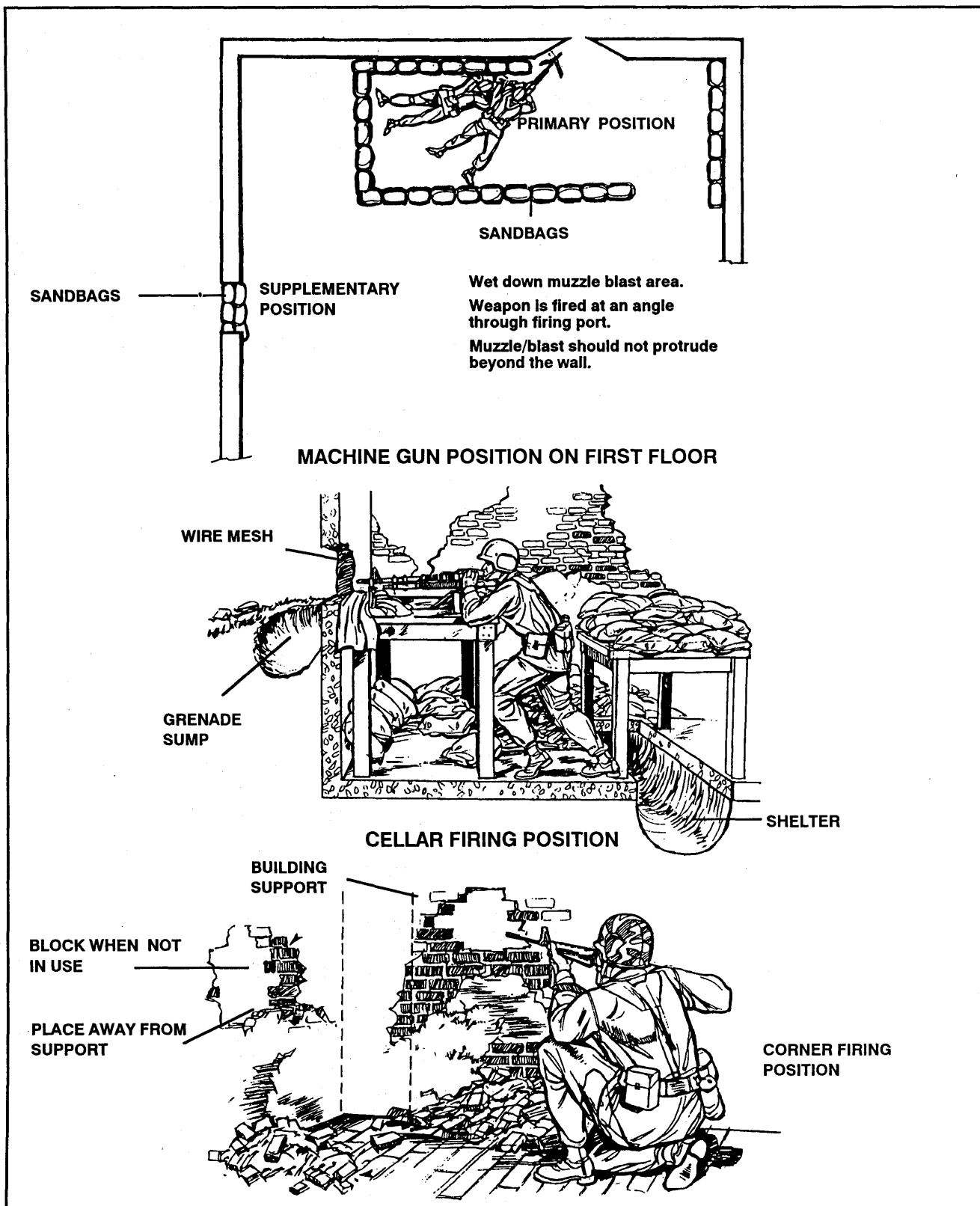


Figure E-1. Weapon positions (continued).

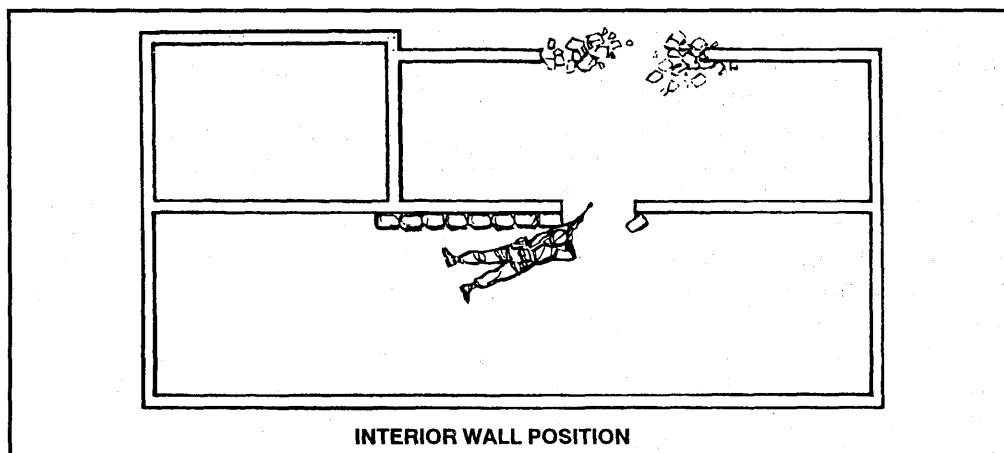


Figure E-1. Weapon positions (continued).

b. **Building Positions.** There are many ways to establish a fighting position in a building.

(1) **Window position.** Soldiers should kneel or stand on either side of a window. To fire downward from upper floors, tables or similar objects can be placed against the wall to provide additional elevation, but they must be positioned to prevent the weapon from protruding through the window. Leaders should inspect positions to determine the width of sector that each position can engage (Figure E-2).



Figure E-2. Window position.

(2) **Loopholes.** To avoid establishing a pattern of always firing from windows, loopholes should be prepared in walls. Soldiers should avoid firing directly through loopholes to enhance individual protection.

(a) Several loopholes are usually required for each weapon (primary, alternate, and supplementary positions). The number of loopholes should be carefully considered because they can weaken walls and reduce protection. Engineers should be consulted before an excessive number of loopholes are made. Loopholes should be made by punching or drilling holes in walls and should be placed where they are concealed. Blasting loopholes can result in a large hole, easily seen by the enemy.

(b) Loopholes should be cone-shaped to obtain a wide arc of fire, to facilitate engagement of high and low targets, and to reduce the size of the exterior aperture (Figure E-3). The edges of a loophole splinter when hit by bullets, therefore, protective linings, such as an empty sandbag held in place by wire mesh, will reduce spalling effects. When not in use, loopholes should be covered with sandbags to prevent the enemy from firing into or observing through them.

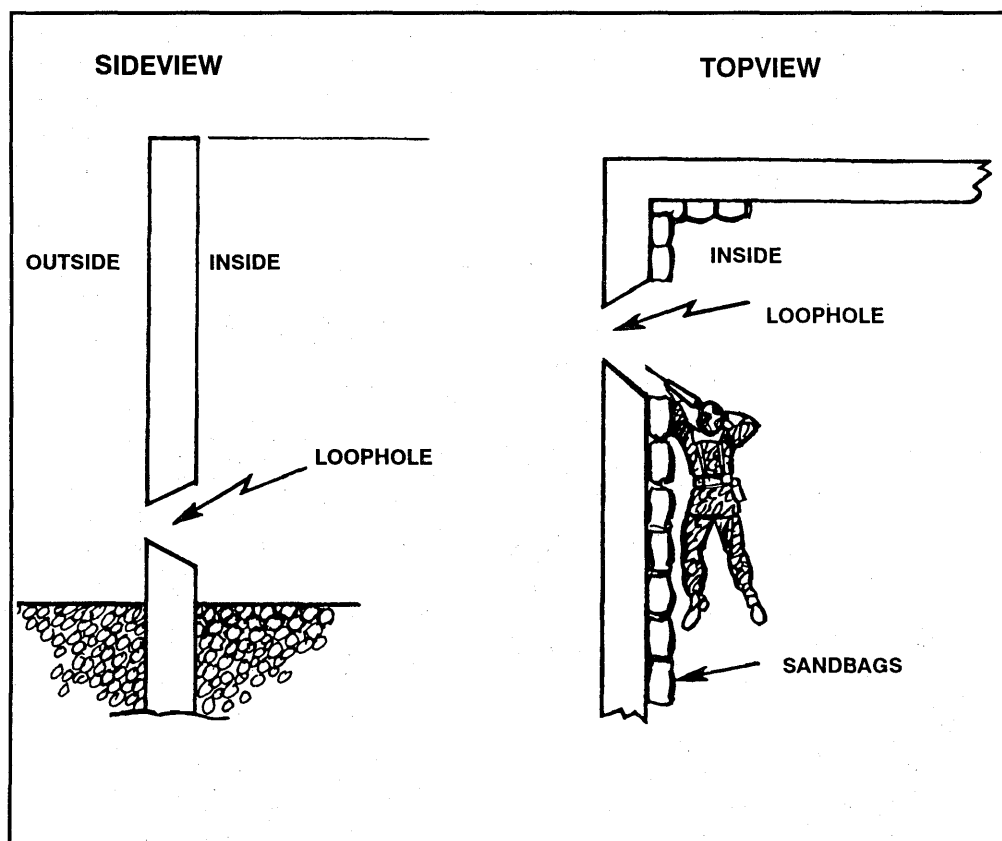


Figure E-3. Cone-shaped loopholes.

(c) Loopholes should also be prepared in interior walls and ceilings of buildings to permit fighting within the position. Interior loopholes should overwatch stairs, halls, and unoccupied rooms, and be concealed by pictures, drapes, or furniture. Loopholes in floors permit the defender to engage enemy personnel on lower floors with small-arms fire and grenades.

(d) Although walls provide some frontal protection, they should be reinforced with sandbags, furniture filled with dirt, or other expedients. Each position should have overhead and all-round protection (Figure E-4).



Figure E-4. Position with overhead and all-round protection.

c. **Other Construction Tasks.** Other construction tasks in basements, on ground floors, and on upper floors will need to be performed.

(1) **Basements and ground floors.** Basements require preparation similar to that of the ground floor. Any underground system not used by the defender that could provide enemy access to the position must be blocked.

(a) **Doors.** Unused doors should be locked, nailed shut, and blocked and reinforced with furniture, sandbags, or other field expedients. Outside doors can be booby trapped by engineers or other training personnel.

(b) **Hallways.** If not required for the defender's movement, hallways should be blocked with furniture and tactical wire (Figure E-5). If authorized, booby traps should be employed.

(c) **Stairs.** Defenders should block stairs not used by the defense with furniture and tactical wire (see Figure E-5) or remove them. If possible, all stairs should be blocked and ladders should be used to move from floor to floor and then removed when not being used. Booby traps should also be employed on stairs.

(d) **Windows.** All glass should be removed. Windows not used should be blocked with boards or sandbags.

(e) **Fighting positions.** Fighting positions should be made in floors. If there is no basement, fighting positions can give additional protection from heavy direct-fire weapons.

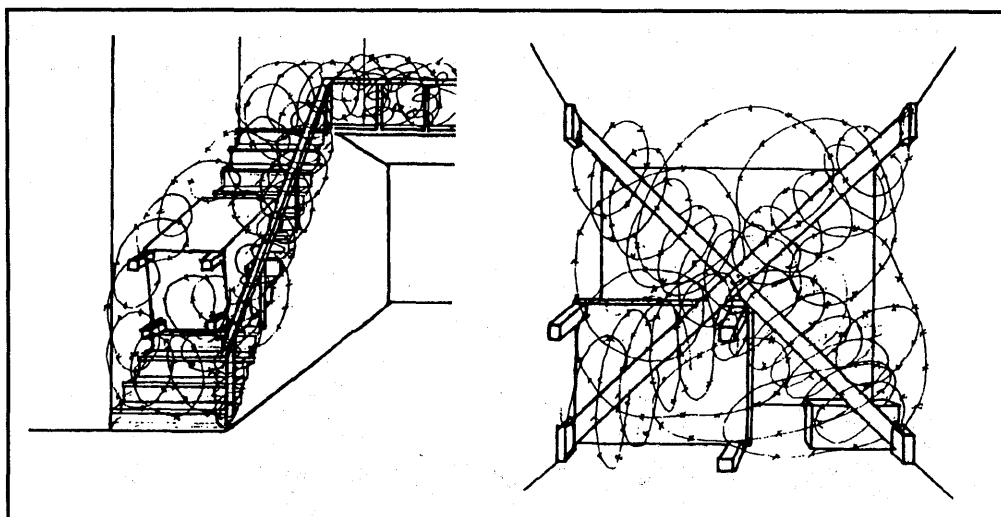


Figure E-5. Blocking hallways and stairs.

(f) *Ceilings.* Support that can withstand the weight of rubble from upper floors should be placed under ceilings (Figure E-6).

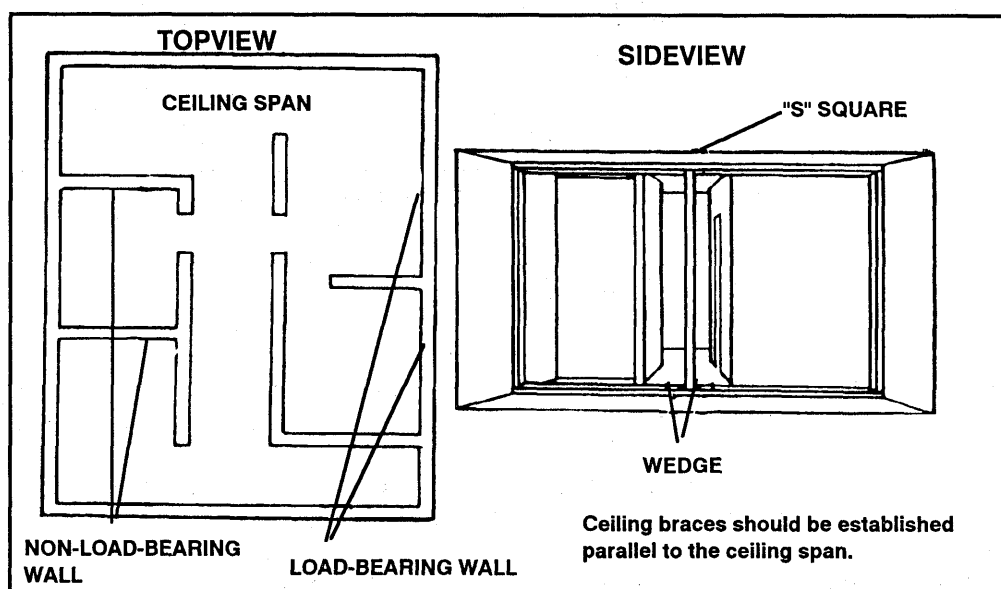


Figure E-6. Ceiling reinforcement.

(g) *Unoccupied rooms.* Rooms not required for defense should be blocked with tactical wire or booby trapped.

(2) *Upper floors.* Upper floors require the same preparation as ground floors. Windows need not be blocked, but they should be covered with wire mesh, which blocks grenades thrown from the outside. The wire should be loose at the bottom to permit the defender to drop grenades.

(3) *Interior routes.* Routes are required that permit defending forces to move within the building to engage enemy forces from any direction. Escape

routes should also be planned and constructed to permit rapid evacuation of a room or the building. Small holes (called mouse holes) should be made through interior walls to permit movement between rooms. Once the defender has withdrawn to another level, such holes should be clearly marked for both day and night identification. All personnel must be briefed as to where the various routes are located. Rehearsals should be conducted so that everyone becomes familiar with the routes (Figure E-7).



Figure E-7. Movement between floors.

(4) **Fire prevention.** Buildings that have wooden floors and raftered ceilings require extensive fire prevention measures. The attic and other wooden floors should be covered with about 1 inch of sand or dirt, and buckets of water should be positioned for immediate use. Firefighting materials (dirt, sand, fire extinguishers, and blankets) should be placed on each floor for immediate use. Water basins and bathtubs should be filled as a reserve for firefighting. All electricity and gas should be turned off. Fire breaks can be created by destroying buildings adjacent to the defensive position.

(5) **Communications.** Telephone lines should be laid through adjacent buildings or underground systems, or buried in shallow trenches. Radio antennas can be concealed by placing them among civilian television antennas, along the sides of chimneys and steeples, or out windows that direct FM communications away from enemy early-warning sources and ground observation. Telephone lines within the building should be laid through walls and floors.

(6) **Rubbling.** Rubbling parts of the building provides additional cover and concealment for weapons emplacements, and should be performed only by trained engineers.

(7) **Rooftops.** Positions in flat-roofed buildings require obstacles that restrict helicopter landings. Rooftops that are accessible from adjacent structures should be covered with tactical wire or other expedients, and must be guarded. Entrances to buildings from rooftops can be blocked if compatible with the overall defensive plan. Any structure on the outside of a building that could assist scaling the buildings to gain access to upper floors, or to the rooftop, should be removed or blocked.

(8) **Obstacles.** Obstacles should be positioned adjacent to buildings in order to stop tanks and to delay infantry.

(9) **Fields of fire.** Fields of fire should be improved around the defensive position. Selected buildings can be destroyed to enlarge fields of fire. Obstacles to antitank guided missiles, such as telephone wires, should be cleared. Dead space should be covered with mines and obstacles.

E-3. ARMORED VEHICLE POSITIONS

Fighting positions for tanks and infantry fighting vehicles are essential to a complete and effective defensive plan in built-up areas.

a. **Armored Vehicle Positions.** Armored vehicle positions are selected and developed to obtain the best cover, concealment, observation, and fields of fire, while retaining the vehicle's ability to move.

(1) If fields of fire are restricted to streets, hull-down positions should be used to gain cover and to fire directly down streets (Figure E-8). From those positions, tanks and BFVs are protected and can rapidly move to alternate positions. Buildings collapsing from enemy fires are a minimal hazard to the armored vehicle and crew.

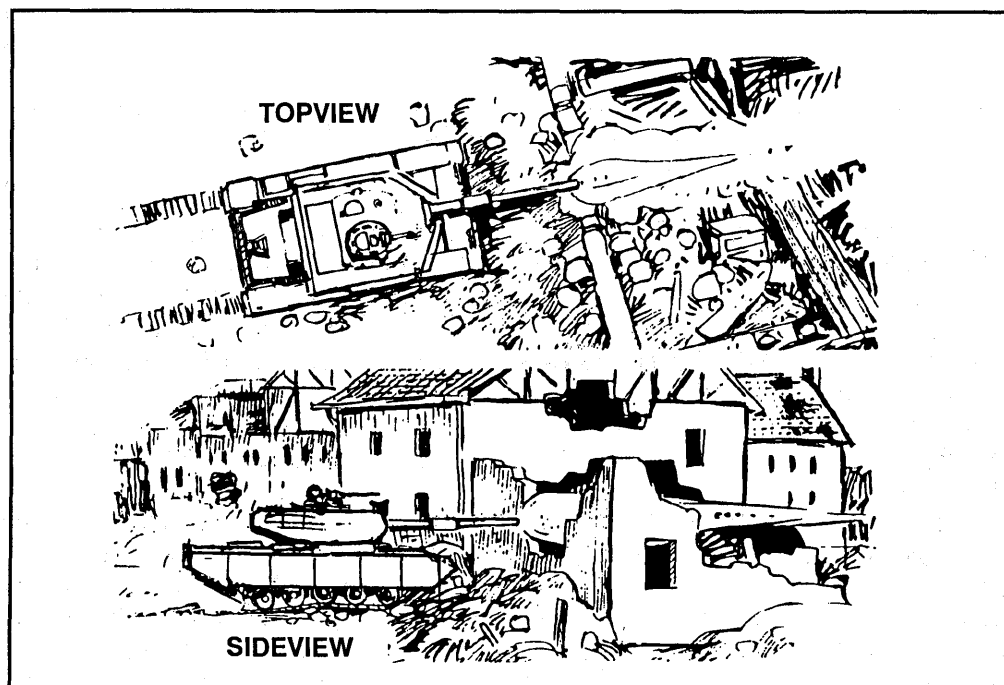


Figure E-8. Hull-down position.

(2) The hide position (Figure E-9) covers and conceals the vehicle until time to move into position for engagement of targets. Since the crew will not be able to see advancing enemy forces, an observer from the vehicle or a nearby infantry unit must be concealed in an adjacent building to alert the crew. The observer acquires the target and signals the armored vehicle to move to the firing position and to fire. After firing, the tank or BFV moves to an alternate position to avoid compromising one location.

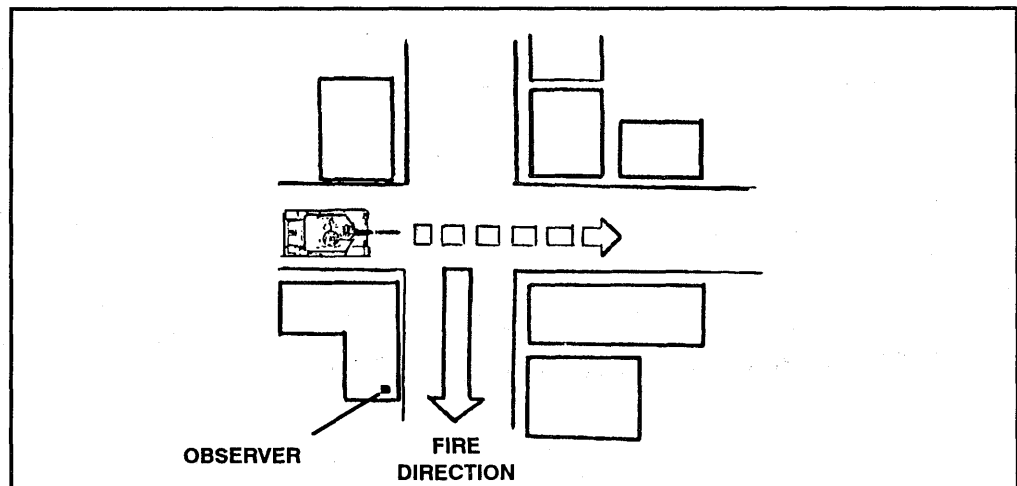


Figure E-9. Hide position.

(3) The building hide position (Figure E-10) conceals the vehicle inside a building. If basement hide positions are inaccessible, engineers must evaluate the building's floor strength and prepare for the vehicle. Once the position is detected, it should be evacuated to avoid enemy fires.

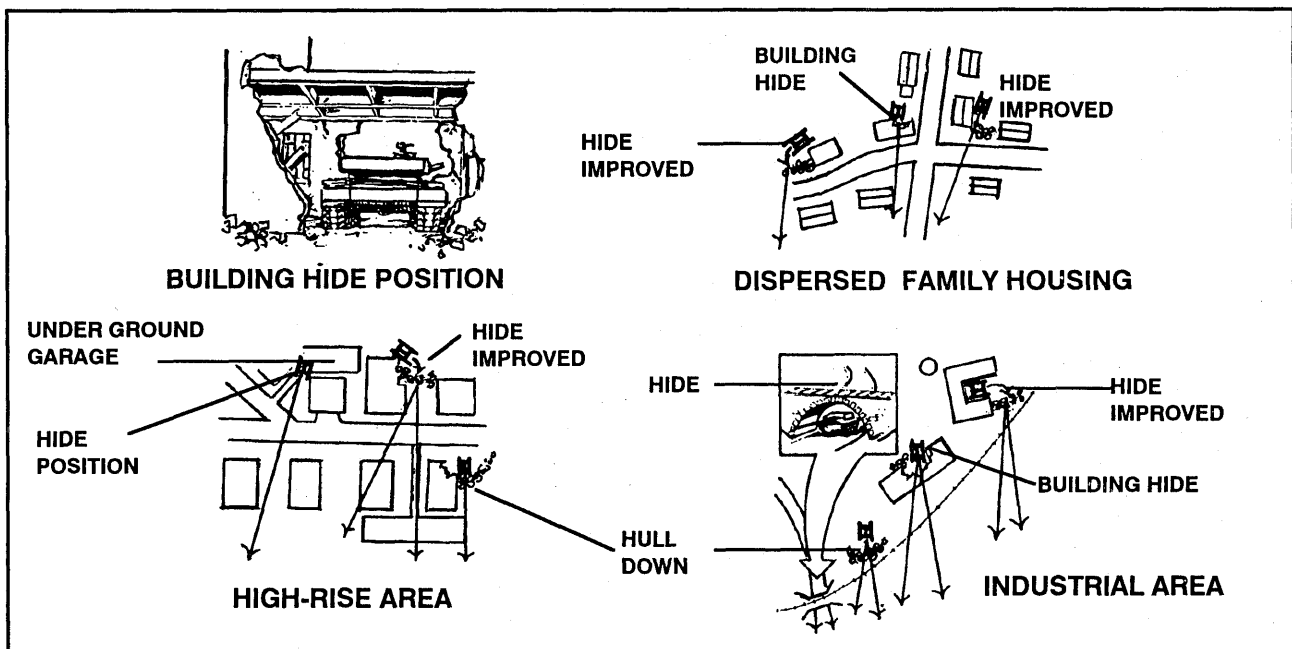


Figure E-10. Building hide position.

E-4. ANTITANK GUIDED MISSILE POSITIONS

Antitank guided missiles must be employed in areas that maximize their capabilities in the built-up area. The lack of a protective transport could require the weapon to be fired from inside or behind a building, or behind the cover of protective terrain (Figure E-11).

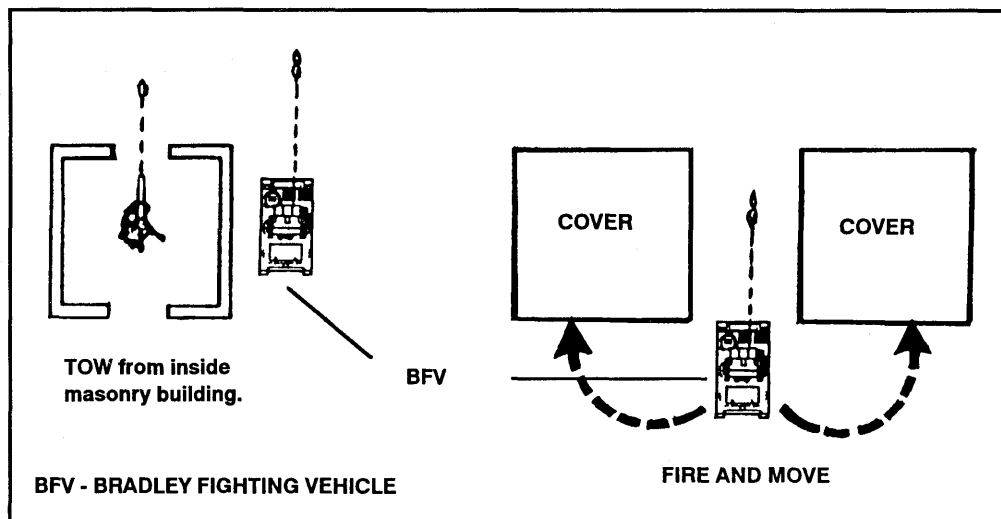


Figure E-11. Antitank guided missiles positions.

a. When ATGMs are fired from a vehicle or from street level or bottom floor fighting positions, rubble can interfere with missile flight. When firing down streets, missiles must have at least 30 inches of clearance over rubble. Other obstacles to missile flight include trees and brush, vehicles, television antennas, buildings, power lines and wires, walls, and fences.

b. A LAW is best suited for built-up areas because its 10-meter minimum arming distance allows employment at close range. LAWs and other light and medium antitank weapons are not effective against the front of modern battle tanks. Because tanks have the least armor protection on the top and rear deck, and the tank presents a larger target when engaged from above, LAWs should fire down onto tanks.

E-6. SNIPER POSITIONS

Snipers contribute to combat in built-up areas by firing on selected enemy soldiers. An effective sniper organization can trouble the enemy far more than its cost in the number of friendly soldiers employed.

a. General areas (a building or group of buildings) are designated as sniper positions (Figure E-12, page E-12), but the sniper selects the best position for engagement. Masonry buildings that offer the best protection, long-range fields of fire, and all-round observation are preferred. The sniper also selects several secondary and supplementary positions to cover his areas of responsibility.

b. Engagement priorities for snipers are determined by the relative importance of the targets to the effective operations of the enemy. Sniper targets usually include tank commanders, direct fire support weapons' crewmen, crew-served weapons' crewmen, officers, forward observers, and radiotelephone operators.

c. Built-up areas often limit snipers to firing down or across streets, but open parts permit engagements at long ranges. Snipers can be employed to cover rooftops, obstacles, dead space, and gaps in FPFs.

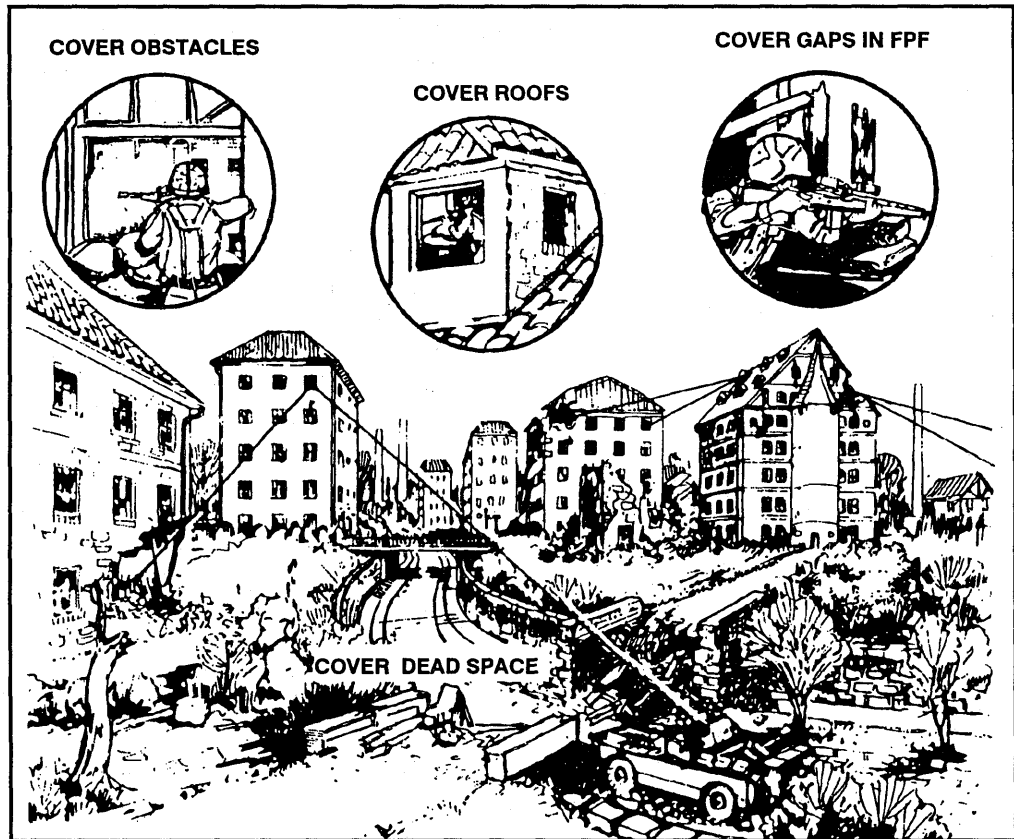


Figure E-12. Sniper positions.

APPENDIX F

ATTACKING AND CLEARING BUILDINGS

At platoon and squad level, the major offensive tasks for combat in built-up areas are attacking and clearing buildings, which involves suppressing fires, advancing infantry assault forces, assaulting a building, and reorganizing the assault force.

F-1. REQUIREMENTS

Regardless of a structure's characteristics or the type of built-up area, there are four interrelated requirements for attacking a defended building: fire support, movement, assault, and reorganization. Proper application and integration of these requirements reduce casualties and hasten accomplishment of the mission. The application is determined by the type of building to be attacked and the nature of the surrounding built-up area. For example, medium-size towns have numerous open spaces, and larger cities have high-rise apartments and industrial and transportation areas, which are separated by parking areas or parks. Increased fire support is required to suppress and obscure enemy gunners covering the open terrain and spaces between buildings. Conversely, the centers of small- and medium-size towns, with twisting alleys and country roads or adjoining buildings, provide numerous covered routes that can decrease fire support requirements.

F-2. FIRE SUPPORT

Fire support and other assistance to advance the assault force are provided by a support force. This assistance includes—

- Suppressing and obscuring enemy gunners within the objective building(s) and adjacent structures.
- Isolating the objective building(s) with direct or indirect fires to prevent enemy withdrawal, reinforcement, or counterattack.
- Breaching walls en route to and in the objective structure.
- Destroying enemy positions with direct-fire weapons.
- Securing cleared portions of the objective.
- Providing replacements for the assault force.
- Providing resupply of ammunition and explosives.
- Evacuating casualties and prisoners.

a. The size of the support force is determined by the type and size of the objective building(s); whether the adjacent terrain provides open or covered approaches; and the organization and strength of enemy defenses.

b. The support force could consist of only one infantry fire team with M60 machine guns, M249s, M203 grenade launchers, and M202 multishot flame weapons. In the case of Bradley-equipped units, the BFV may provide support with the 25-mm gun as the rifle team assaults. In situations involving a larger assault force, a platoon or company reinforced with tanks, engineers, and self-propelled artillery may be required to support movement and assault by an adjacent platoon or company.

c. After seizing objective buildings, the assault force reorganizes and may be required to provide supporting fires for a subsequent assault. Each weapon is assigned a target or area to cover. Individual small-arms weapons place fires on likely enemy weapon positions—loopholes, windows, roof areas. Snipers are best employed in placing accurate fire through loopholes or engaging long-range targets. The M202s and M203s direct their fires through windows or loopholes.

d. LAWs and demolitions are employed to breach walls, doors, barricades, and window barriers on the ground level of structures. Tank main guns and BFV 25-mm guns engage first-floor targets and breach walls for attacking infantry. Tank machine guns engage suspected positions on upper floors and in adjacent structures. In addition to destroying or weakening structures, tank main gun projectiles cause casualties by explosive effects and by hurling debris throughout the interior of structures.

e. Artillery and mortars use time fuzes to initially clear exposed personnel, weapons, observation posts, and radio sites from rooftops. They then use delayed fuze action to cause casualties among the defenders inside the structure from shrapnel and falling debris. Artillery can also be used in the direct-fire mode much like the tank and CEV.

F-3. MOVEMENT

The assault force (squad, platoon, or company) minimizes enemy defensive fires during movement by—

- Using covered routes.
- Moving only after defensive fires have been suppressed or obscured.
- Moving at night or during other periods of reduced visibility.
- Selecting routes that will not mask friendly suppressive fires.
- Crossing open areas (streets, space between buildings) quickly under the concealment of smoke and suppression provided by support forces.
- Moving on rooftops that are not covered by enemy direct fires.

a. In lightly defended areas, the requirement for speed may dictate moving through the streets and alleys without clearing all buildings. Thus, the maneuver element should employ infantry to lead the column, closely followed and supported by BFVs or tanks.

b. When dismounted, rifle elements move along each side of the street, with leading squads keeping almost abreast of the lead tanks. When not accompanied by tanks or BFVs, rifle elements move single file along one side of the street under cover of fires from supporting weapons. They are dispersed and move along quickly. Each man is detailed to observe and cover a certain area such as second-floor windows on the opposite side of the street.

F-4. ASSAULT

The assault force, regardless of size, must quickly and violently execute its assault and subsequent clearing operations. Once momentum has been gained, it is maintained to prevent the enemy from organizing a more determined resistance on other floors or in other rooms. The small-unit leaders should keep the assault force moving, yet not allow the operation to become disorganized.

a. An assault in a built-up area involves the elementary skills of close combat. Leaders must—

- Be trained in the required techniques to defeat the enemy in a face-to-face encounter.
- Keep themselves in excellent physical condition.
- Have confidence in their abilities.

b. The composition of the assault force varies depending on the situation; however, the considerations for equipping the force remain the same. The criteria for the size of any party are the availability of equipment and personnel, and the tactical situation. The assault force for a squad should consist of 2 three-man teams carrying only a fighting load of equipment and as much ammunition as possible, especially grenades (Figure F-1). A three-man support team provides suppressive fire for the assault force. The assault teams use maneuver techniques to clear a building room by room.

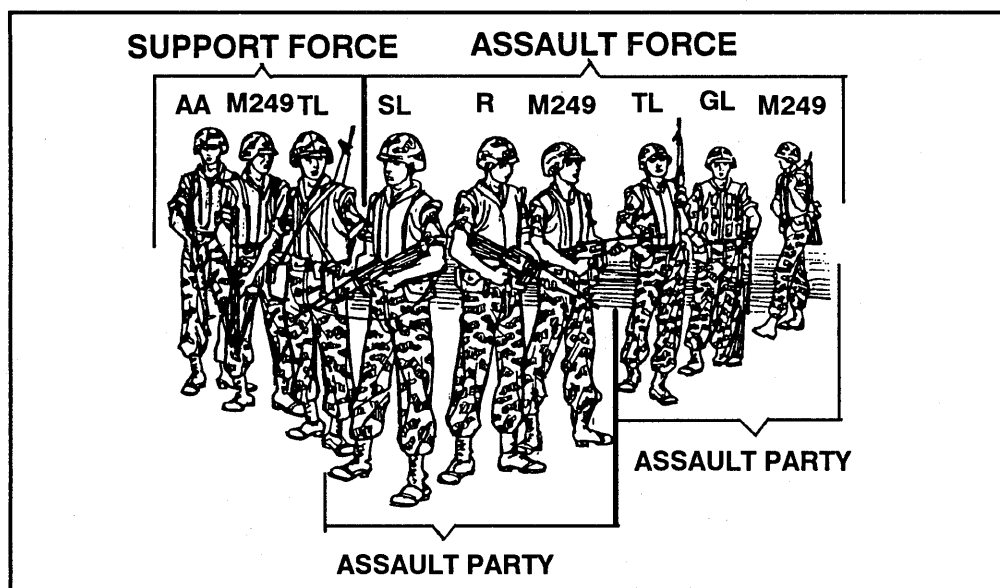


Figure F-1. Rifle squad.

c. The M249 is normally employed with the support element but can also be used with the assault force to gain the advantages of its more powerful round. The Dragon may not be carried by the assault force due to its weight versus its expected effectiveness against the building being assaulted. The squad leader is located with the element from which he can best control the squad. If the squad is understrength or suffers casualties, priority is given to keeping the assault force up to strength at the expense of the support force (see Tables F-1 and F-2).

SUPPORT FORCE	ASSAULT FORCE
3 - 7.62-mm (Coaxial)	(Each squad organized into two- or three-man assault/support parties).
2 - M249s	
1 - Dragon	2 - 7.62-mm (4 - M249s)
1 - M202	* 2 - Dragons
LAWs	LAWs
4 - 25-mm guns	Hand grenades
* Dependent upon Dragon's effectiveness against building being attacked.	

Table F-1. Bradley platoon.

SUPPORT FORCE	ASSAULT FORCE
2 - 7.62-mm	LAWs
2 - Dragons	Hand grenades
1 - M202	* 1 - Dragon
4 - M249s	2 - M203s
4 - M203s	2 - M249s
LAWs	
* Dependent upon Dragon's effectiveness against building being attacked.	

Table F-2. Alternative with an infantry rifle platoon.

F-5. CLEARING

Entry at the top and fighting downward is the preferred method of clearing a building (Figure F-2). Clearing a building is easier from an upper story since gravity and building construction become assets to the assault force when throwing hand grenades and moving from floor to floor. This method is only feasible, however, when access to an upper floor or rooftop can be gained from the windows or roofs of adjoining, secured buildings; or, when enemy air defense weapons can be suppressed and troops transported to the rooftops by helicopter. Helicopters should land only on those buildings that have special heliports on the roofs or parking garages. Soldiers can rappel onto the roof or dismount as the helicopter hovers a few feet above the roof. Troops then breach the roof or common walls with explosives and use ropes to enter the lower floors. Stairs are guarded by friendly security elements when not used.

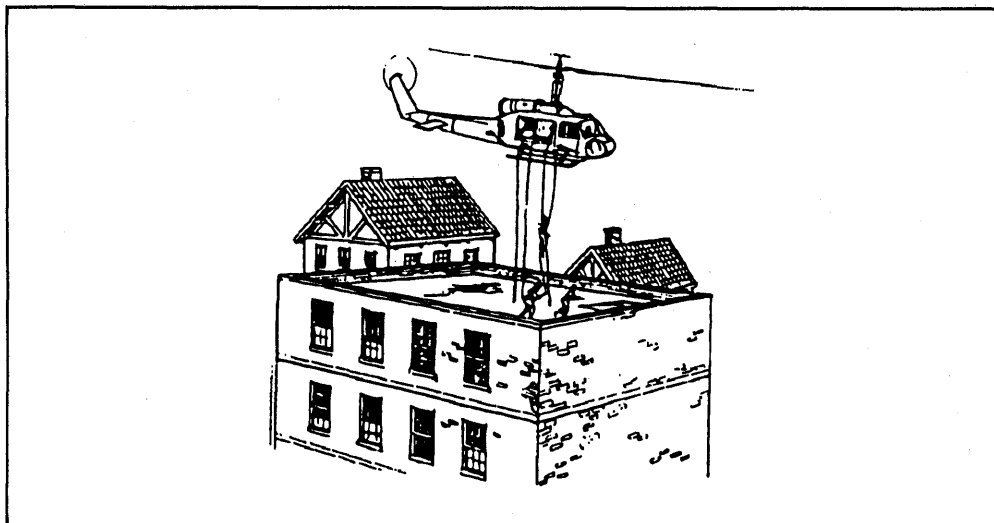


Figure F-2. Helicopters used to clear buildings.

a. Although the top-to-bottom method is preferred for clearing a building, assaulting the bottom floor and clearing upward is a common method in all areas except where buildings form continuous fronts. In this situation, the assault force attempts to close on the flank(s) or rear of the building. The assault team clears each room on the ground floor and then, moving up, begins a systematic clearance of the remaining floors.

b. Preferably, entry is gained through walls breached by explosives or gunfire. Assault teams avoid windows and doors since they are usually covered by fire or are boobytrapped. If tanks are attached to the company, they can breach the wall by main gunfire for one entry point (Figure F-3).

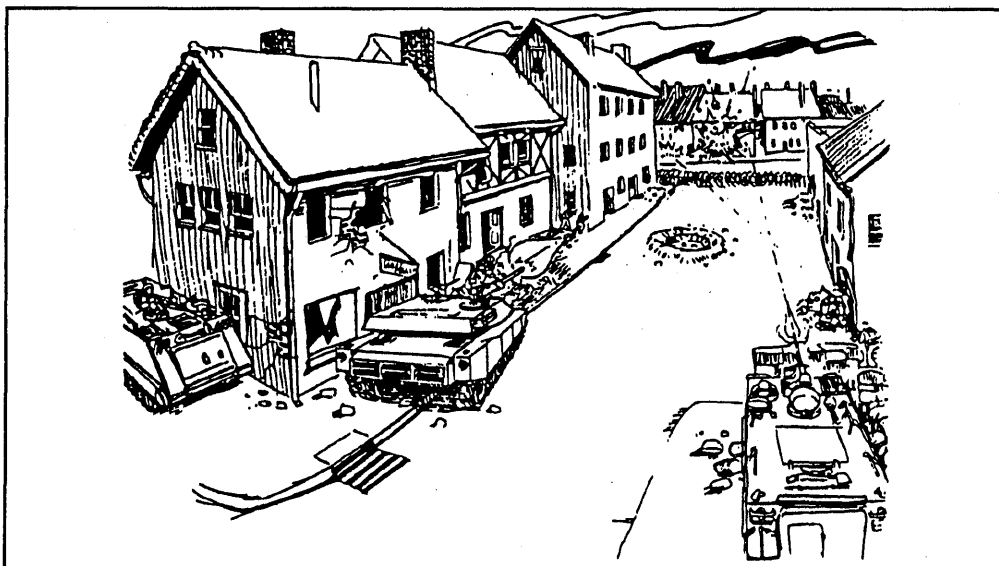


Figure F-3. Main gun used to breach exterior.

c. Just before the rush of the assault force, suppressive fires on the objective should be increased by the support force and continued until masked by the advancing assault force. Once masked, fires are shifted to upper windows and continued until the assault force has entered the building. At that time, fires are shifted to adjacent buildings to prevent enemy withdrawal or reinforcement.

d. Assault parties quickly close on the building. Before entry through the breached wall, a hand grenade is cooked off (pin pulled, safety lever released, and held for two seconds before being thrown) and vigorously thrown inside. Immediately after the explosion, assault parties enter and spray the interior, using three-round bursts and concentrating on areas of the room that are possible enemy positions.

e. Once inside the building, the priority tasks are to cover the staircase leading to upper floors and the basement, and to seize rooms that overlook approaches to the building. These actions are required to isolate enemy forces within the building and to prevent reinforcement from the outside. The assault parties clear each ground floor room and then the basement.

(1) The assault team leader determines which room(s) to clear first.

(2) The support team provides suppressive fire while the assault team is systematically clearing the building. It also provides suppressive fire on adjacent buildings to prevent enemy reinforcements or withdrawal. The support team destroys any enemy trying to exit the building.

(3) After assault team 1 establishes a foothold in the building, a soldier from assault team 2 positions himself to provide security for the foothold. Assault team 1 proceeds to clear the first room.

(a) Soldier 1 throws a grenade into the room and yells, "Frag out," to alert friendly personnel that a grenade has been thrown toward the enemy.

WARNING

If walls and floors are thin, fragments from hand grenades can injure soldiers outside the room.

*(b) After the grenade explodes, soldier 2 enters the room and positions himself to the left of the door up against the wall, scanning the room from left to right. (Soldiers 1 and 3 provide outside room security.) Soldier 2 will give a voice command of "All clear" before soldier 3 enters the room.

(c) Soldier 3 shouts, "Coming in," and enters the room. He positions himself to the right of the door up against the wall and scans the room from right to left. (Soldier 2 provides inside room security and soldier 1 provides outside room security.)

(d) Soldier 1 positions himself up against the hall wall so that he can provide security outside the room and can also observe into the room.

(e) Soldier 3 proceeds to clear the room while soldier 2 provides inside room security. Soldier 1 remains at his outside security position.

(f) After the room is cleared, the clearing team shouts, "Coming out," and proceeds to clear the next room(s). A soldier from the second assault

team positions himself to cover the cleared room. The cleared rooms are marked IAW unit SOP.

(e) This procedure is continued until the entire floor is cleared.

f. If the assault force is preparing to clear a building from the top floor down, they should gain entrance through a common wall or the roof of an adjoining building. Accompanied by the company's attached engineer squad, the force uses a demolition charge to breach the wall and to gain entrance to the top floor. Access to lower floors and rooms may be gained by breaching holes in the floor and having the soldiers jump or slide down ropes to the lower floors. Stairs can be used if they are first cleared.

g. When using the top-to-bottom method of clearing, security requirements remain the same as for other methods (Figure F-4). After the floor is breached to gain access to a lower floor, a grenade is allowed to cook off and is dropped to the lower room. A soldier then sprays the lower room with gunfire using three-round bursts and drops through the mousehole.

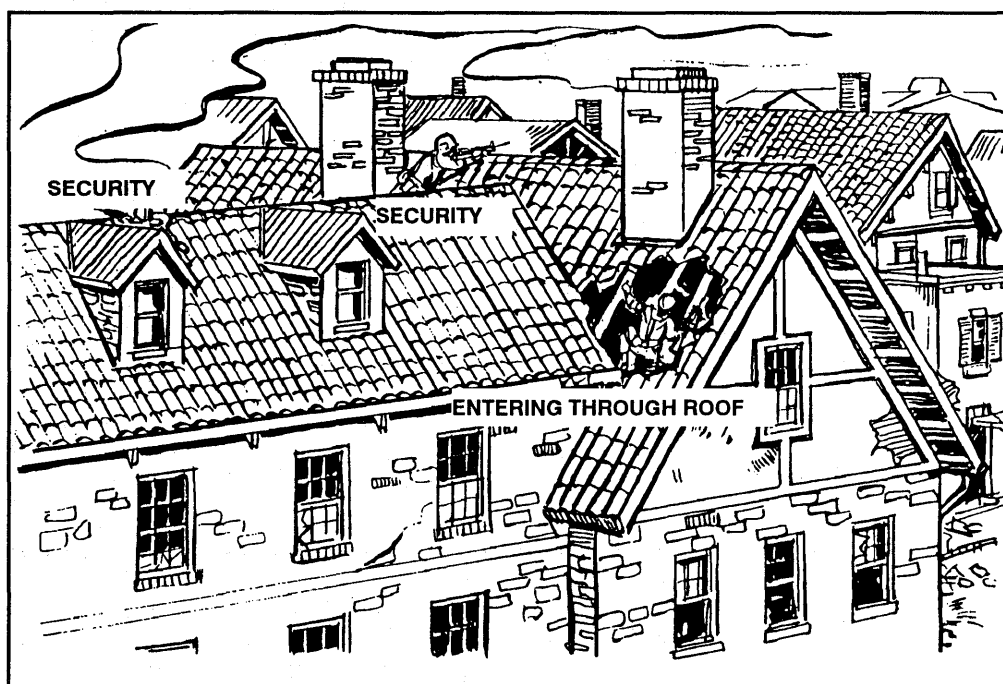


Figure F-4. Upper floors secured.

h. Soldiers must avoid clearing rooms the same way each time by varying techniques so that the enemy cannot prepare for the assault (Figure F-5, page F-8). As rooms are cleared, doors should be left open and a predetermined mark (cloth, tape, spray paint) placed on the doorjamb or over the door.

i. If there is a basement, it should be cleared as soon as possible, preferably at the same time as the ground floor. The procedures for clearing a basement are the same as for any room or floor, but important differences do exist. Basements often contain entrances to tunnels such as sewers and communications cable tunnels. These should be cleared and secured to prevent the enemy from infiltrating back into cleared areas.

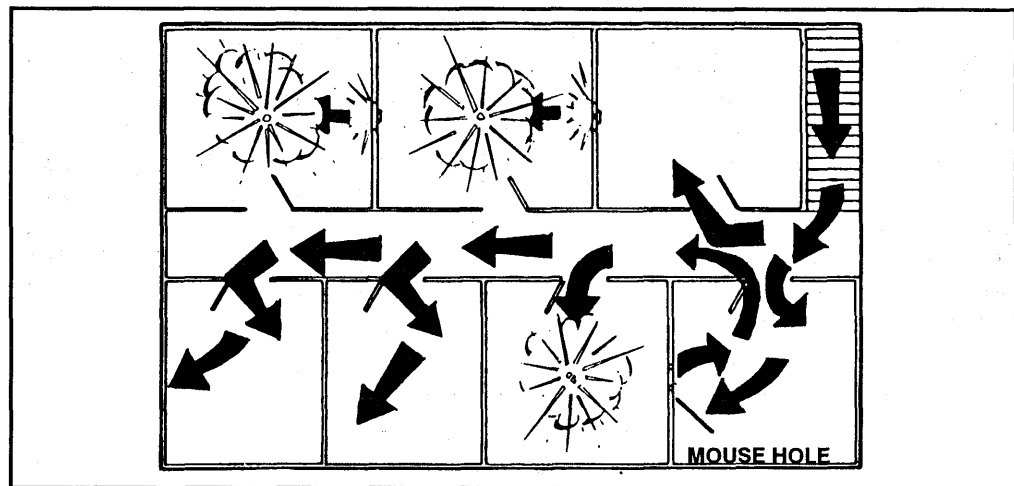


Figure F-5. Varying techniques for clearing rooms.

j. The most common types of buildings that must be cleared are brick buildings, brick houses, box-wall buildings, heavy-clad framed buildings, and light-clad framed buildings (Figure F-6). The best way to enter a brick building is to blow a breaching hole in the side with a tank firing HEAT ammunition. If tanks are not available, a door or window in the rear of the building usually provides better cover and concealment for entry than one in the front. If there is enough cover and concealment, the assault force should enter the rear of the building at an upper level, using a fire escape or grappling hook.

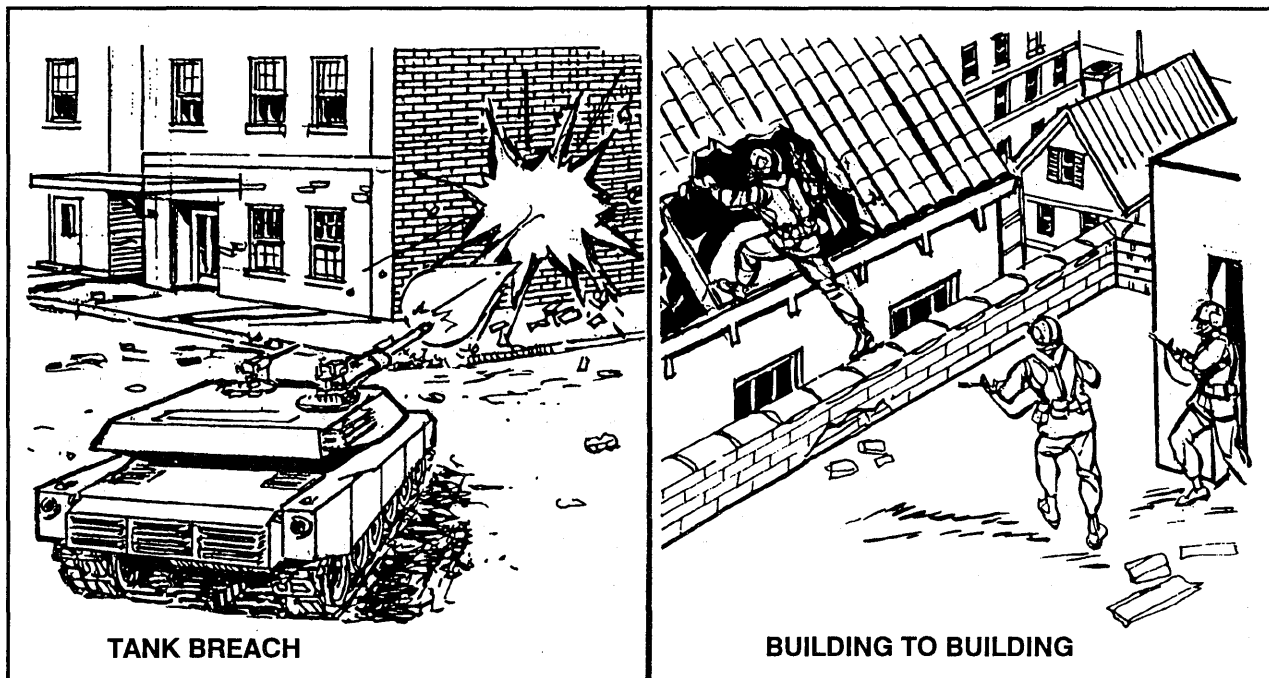


Figure F-6. Building being cleared.

(1) **Brick buildings.** To clear from building to building, the best method is to move from rooftop to rooftop since the roofs of brick buildings are usually easy to breach. The walls between buildings are at least three bricks thick (total of six bricks between buildings) and require large quantities of demolitions to breach. Walls are normally easier to breach on an upper floor than a lower floor, since the walls are thinner on upper floors. If rooftops are covered by fire and if there are not enough demolitions to breach walls between buildings, clearing from rear to rear of buildings is safer than clearing from front to front. The floor plans in brick buildings are different on ground floor levels than on upper levels (Figure F-7).

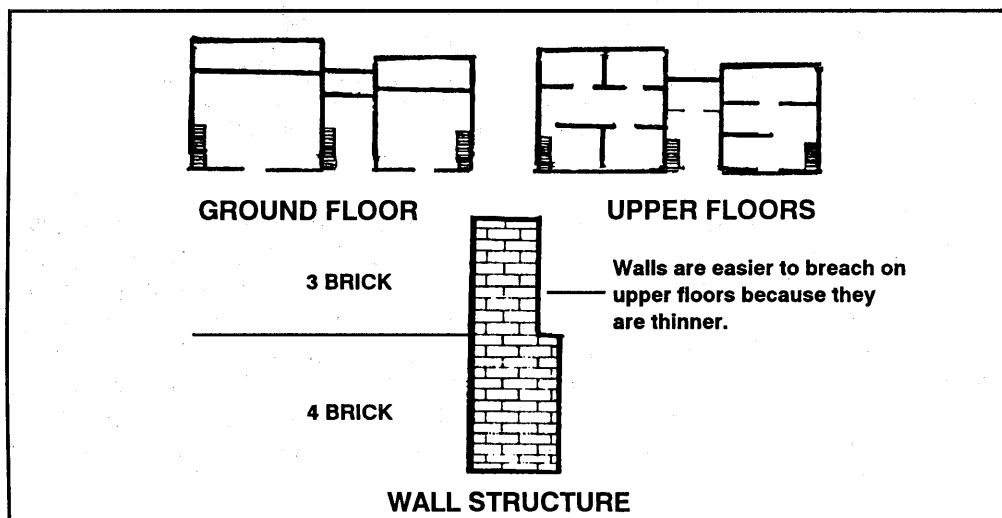


Figure F-7. Floor plans of brick buildings.

(2) **Brick houses.** Brick houses have similar floor plans on each floor (Figure F-8), therefore, ground floors are cleared the same way as upper floors.

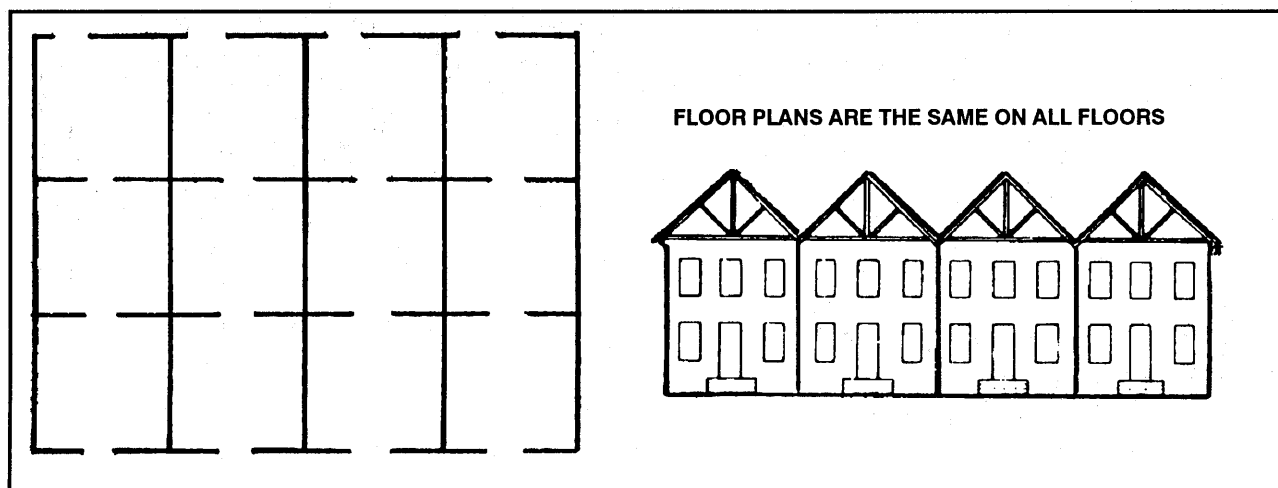


Figure F-8. Similar floor plans.

(3) **Box-wall buildings.** Box-wall buildings often have reinforced concrete walls (Figure F-9), which are difficult to breach due to the reinforcing bars. Therefore, the best way to enter is to blow down the door or to blow in one of the side windows. The floor plans of these buildings are predictable; clearing rooms is usually done from one main hallway. Interior walls are also constructed of reinforced concrete and are difficult to breach. The stairways at the ends of the building must be secured during clearing.

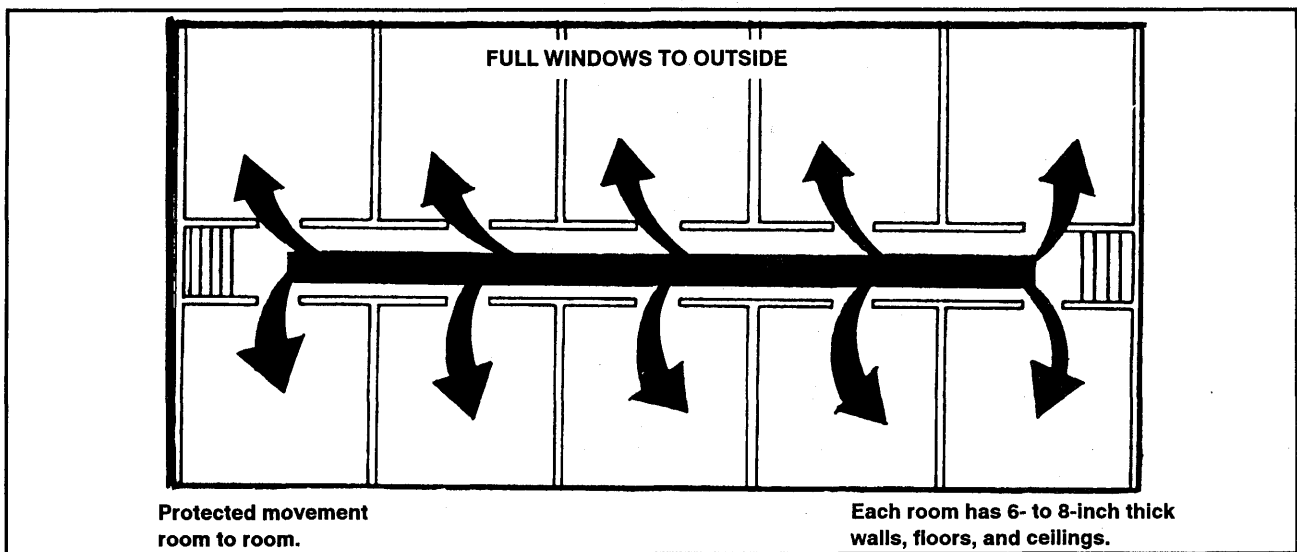


Figure F-9. Box-wall principle buildings.

(4) **Heavy-clad framed buildings.** Heavy-clad framed buildings are relatively easy to breach, because a tank can breach a hole in the cladding (Figure F-10). Their floor plans are oriented around a stairway or elevator, which must be secured during clearing. The interior walls of these buildings can be breached, although they may require use of demolitions.

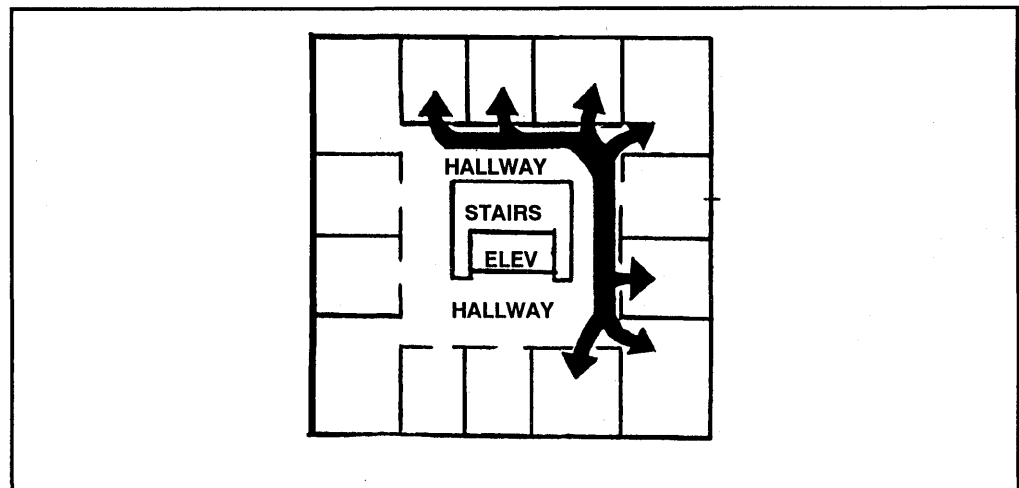


Figure F-10. Heavy-clad framed buildings.

(5) **Light-clad framed buildings.** On light-clad framed buildings (Figure F-11), the clearing tasks are usually the same: secure the central stairway and clear in a circular pattern. Walls are easier to breach since they are usually thin enough to be breached with an axe.

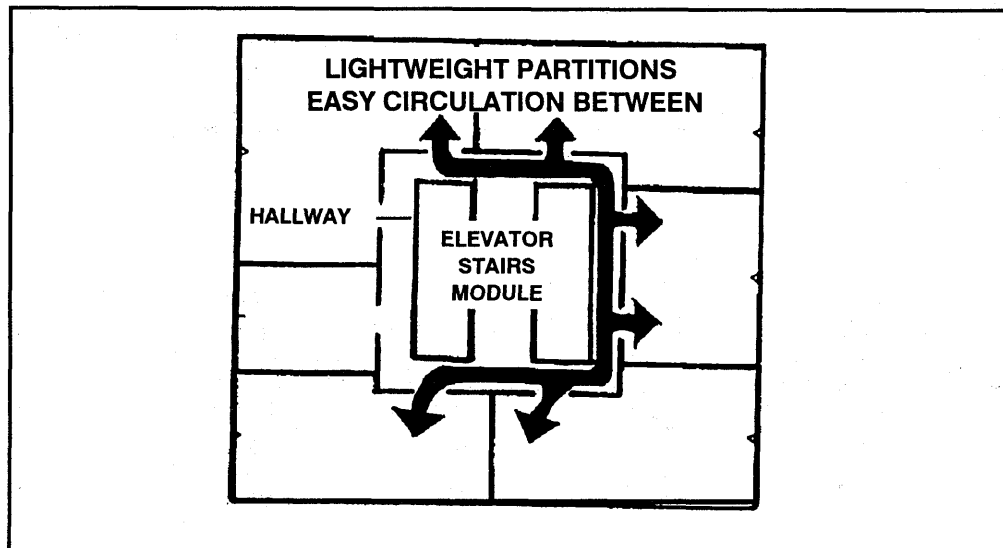


Figure F-11. Light-clad framed buildings.

F-6. REORGANIZATION

Reorganization of the assault force in a cleared building must be quick to repel enemy counterattacks and to prevent the enemy from infiltrating back into the cleared building. After securing a floor (bottom, middle, or top), selected members of the assault force are assigned to cover potential enemy counterattack routes to the building. Those sentinels alert the assault force and place a heavy volume of fire on enemy forces approaching the building. They guard—

- Enemy mouseholes between adjacent buildings.
- Covered routes to the building.
- Underground routes into the basement.
- Approaches over adjoining roofs.

As the remainder of the assault force completes search requirements, they are assigned defensive positions. After the building has been cleared, the following actions are taken:

- Resupplying and redistributing ammunition.
- Marking the building to indicate to friendly forces that the building has been cleared.
- Assuming an overwatch mission and supporting an assault on another building.
- Treating and evacuating wounded personnel.
- Developing a defensive position if the building is to be occupied for any period.

MILITARY OPERATIONS ON URBANIZED TERRAIN (MOUT) UNDER RESTRICTIVE CONDITIONS

Across the operational continuum, and especially during OOTW, commanders can expect to encounter restrictions on their use of firepower during MOUT. Basic doctrinal principles remain the same, but the tactics, techniques, and procedures may have to be modified to stay within established rules of engagement and to avoid unnecessary collateral damage.

G-1. HIGH-INTENSITY, PRECISION, AND SURGICAL MOUT

Infantrymen conduct MOUT under many varying conditions across the spectrum of conflict. These conditions range from large-scale, high-intensity combat, through isolated actions against armed belligerents mixed with noncombatants, to peace operations that may resemble dangerous police work more than traditional combat in built-up areas. Changes from high-intensity MOUT to precision or surgical MOUT are a result of significant alterations in the existing conditions of METT-T and of the imposition of overriding strategic political considerations. These alterations normally require that units modify the way they fight in urban areas. Unfortunately, there are no clear boundaries that delineate the change from high-intensity to precision to surgical MOUT. These terms are merely expressions used to describe the US force's degree of sensitivity to political considerations during the operation being conducted.

a. **High-Intensity MOUT.** Infantry units must be prepared at all times to conduct violent combat under conditions of high-intensity MOUT. These conditions are combat actions against a determined enemy occupying prepared positions or conducting planned attacks. High-intensity MOUT requires the coordinated application of the full combat power of the joint combined arms team. An infantry unit's mission is normally to seize, clear, or defend urban terrain, engaging and defeating the enemy by the use of whatever force is necessary. Although the changing world situation may have made high-intensity MOUT less likely, it represents the high end of the combat spectrum, and units must be trained for it. High-intensity MOUT is the most stressful of all operations in urban areas and can be casualty-intensive for both sides. Even though the full integrated firepower of the joint combined arms team is brought to bear on the enemy, commanders must still make attempts to limit unnecessary destruction and casualties among noncombatants.

b. **Precision MOUT.** Infantry units of all types must routinely expect to operate under conditions of precision MOUT, especially during OOTW. Under precision MOUT conditions, either the enemy is thoroughly mixed with the noncombatants or political considerations require that the ROE be significantly more restrictive than under high-intensity MOUT conditions.

Infantry operations under conditions of precision MOUT normally involve combat action. Some of this combat can be quite violent for short periods. It is marked, however, by conscious acceptance by US forces of the need to focus and restrain the combat power used. The commander may bring overwhelming force to bear, but only on specific portions of the urban area occupied by the enemy. He may choose different TTP in order to remain within the bounds of the more restrictive ROE. Tighter ROE demands strict accountability of individual and unit actions. When preparing for precision MOUT operations, the commander must realize that not only are the ROE changing but also the TTP. These changes require that soldiers be given time to train for the specific operation. For example, when clearing a room, units may modify the procedure of first throwing a grenade into the room before entering. This may be done to lessen the possible casualties among noncombatants interspersed with the enemy. Additional training on close quarters battle techniques may be necessary before the soldiers are prepared to execute the mission.

c. **Surgical MOUT.** Operations conducted under surgical MOUT conditions include special-purpose raids, small precision strikes, or small-scale personnel seizure or recovery operations in a MOUT environment. They may closely resemble US police operations by Special Weapons and Tactics (SWAT) teams and are usually conducted by special operations forces. They may even involve cooperation between US forces and host nation police. Though regular units may not be involved in the actual surgical operation, they may support it by isolating the area or providing security or crowd control.

G-2. RULES OF ENGAGEMENT

The unified commander issues the rules of engagement for tactical forces. The ROE are based on the commander's analysis of his guidance from the National Command Authority, the mission that he has been given, the existing threat, the laws of land warfare, and any host nation or third-world country constraints on US forces.

a. The political concerns used while developing the ROE may appear to conflict with the physical security needs of the infantry force. Politically driven constraints must be weighed against the potential risks to mission accomplishment and to the force itself. ROE must be practical, realistic, understandable, and enforceable. Commanders at all levels can affect the ROE by suggesting changes or requesting clarification or modifications. Like the mission, ROE must be tailored to the day-to-day changes in the conditions and threats that face the US forces.

b. Whatever the situation that has called for restricted ROE, infantry forces will then be operating in a dangerous, yet highly constrained, environment. This demands the highest degree of patience, training, and dedication on the part of the military force. An example of ROE used during Operation Just Cause is shown in Figure G-1. It is *not* intended to be used as a sole source document for developing ROE, but as an example of how political considerations during an OOTW mission were translated by the commander into specific ROE.

**ALL ENEMY MILITARY PERSONNEL AND VEHICLES
TRANSPORTING THE ENEMY OR THEIR SUPPLIES MAY
BE ENGAGED SUBJECT TO THE FOLLOWING
RESTRICTIONS:**

- a. Armed force is the last resort.
- b. When possible, the enemy will be warned first and allowed to surrender.
- c. Armed civilians will be engaged only in self-defense.
- d. Civilian aircraft will not be engaged without approval from above division level unless it is in self-defense.
- e. Avoid harming civilians unless necessary to save US lives. If possible, try to arrange for the evacuation of civilians prior to any US attack.
- f. If civilians are in the area, do not use artillery, mortars, armed helicopters, AC-130s, tube- or rocket-launched weapons, or M551 main guns against known or suspected targets without the permission of a ground maneuver commander, LTC or higher (for any of these weapons).
- g. If civilians are in the area, all air attacks must be controlled by a FAC or FO.
- h. If civilians are in the area, close air support (CAS), white phosphorus, and incendiary weapons are prohibited without approval from above division level.
- i. If civilians are in the area, do not shoot except at known enemy locations.
- j. If civilians are not in the area, you can shoot at suspected enemy locations.
- k. Public works such as power stations, water treatment plants, dams, or other utilities may not be engaged without approval from above division level.
- l. Hospitals, churches, shrines, schools, museums, and any other historical or cultural site will not be engaged except in self-defense.
- m. All indirect fire and air attacks must be observed.
- n. Pilots must be briefed for each mission on the location of civilians and friendly forces.
- o. No booby traps. No mines except as approved by division commander. No riot control agents except with approval from above division level.
- p. Avoid harming civilian property unless necessary to save US lives.

Figure G-1. Example of Operation Just Cause ROE.

- q. Treat all civilians and their property with respect and dignity. Before using privately owned property, check to see if any publicly owned property can substitute. No requisitioning of civilian property without permission of a company-level commander and without giving a receipt. If an ordering officer can contract for the property, then do not requisition it. No looting. Do not kick down doors unless necessary. Do not sleep in their houses. If you must sleep in privately owned buildings, have an ordering officer contract for it.
- r. Treat all prisoners humanely and with respect and dignity.
- s. Annex R to the OPLAN provides more detail. Conflicts between this card and the OPLAN should be resolved in favor of the OPLAN.

DISTRIBUTION: 1 per trooper deployed to include all ranks.

**SUPPLEMENTAL RULES OF ENGAGEMENT FOR
SELECTED RECURRING OPERATIONS:**

- 1. CONTROL OF CIVILIANS ENGAGED IN LOOTING.
 - a. Senior person in charge may order warning shots.
 - b. Use minimum force but not deadly force to detain looters.
 - c. Defend Panamanian (and other) lives with minimum force including deadly force when necessary.
- 2. ROADBLOCKS, CHECKPOINTS AND SECURE DEFENSIVE POSITIONS.
 - a. Mark all perimeter barriers, wires, and limits. Erect warning signs.
 - b. Establish second positions to hastily block those fleeing.
 - c. Senior person in charge may order warning shots to deter breach.
 - d. Control exfiltrating civilians with minimum force necessary.
 - e. Use force necessary to disarm exfiltrating military and paramilitary.
 - f. Attack to disable, not destroy, all vehicles attempting to breach or flee.
 - g. Vehicle that returns or initiates fire is hostile. Fire to destroy hostile force.
 - h. Vehicle that persists in breach attempt is presumed hostile. Fire to destroy hostile force.
 - i. Vehicle that persists in flight after a blocking attempt IAW instruction 2b is presumed hostile. Fire to destroy hostile force.

Figure G-1. Example of Operation Just Cause ROE (continued).

3. CLEARING BUILDINGS NOT KNOWN TO CONTAIN HOSTILE FORCE.

- a. Warn all occupants to exit.
- b. Senior person in charge may order warning shots to induce occupants to exit.
- c. Do not attack hospitals, churches, shrines, or schools, museums, and any historical or cultural sites except in self-defense.
- d. Respect and minimize damage to private property.
- e. Use minimum force necessary to control the situation and to ensure the area is free of hostile force.

Figure G-1. Example of Operation Just Cause ROE (continued).

G-3. IMPACT OF CIVILIANS ON MOUT

The presence of large concentrations of civilian noncombatants constrains employment of combat power during tactical operations.

a. **Mobility.** Civilians attempting to escape over roads can block military movement. Commanders should plan routes to be used by civilians and should seek the assistance of the military and civil police in traffic control.

b. **Firepower.** The presence of civilians and the desire to limit collateral damage can restrict the use of fires and reduce the firepower available to a commander. Selected areas may be designated as "no fire" areas in order to prevent civilian casualties and damage to important urban structures, or for other reasons. Some areas may be limited to the use of small arms and grenades only, with prohibitions on air strikes, artillery, mortars, and flame. Target acquisition and the conduct of indirect-fire missions may be complicated by the requirement for positive target identification. Detailed guidance on the use of firepower in the presence of civilians will normally be published by the division G3. When no guidance is available, the general rules of the law of land warfare always apply.

c. **Logistical Support and Civil Order.** Commanders at all levels automatically assume the burden of ensuring the bare necessities of life to all civilian noncombatants that fall under their control during MOUT. Depending on the situation, protection, food, water, shelter, and medical care may be provided in special refuges established for that purpose, or they may be provided in place by some other organization. Whatever the final arrangement, US commanders should expect to exercise control and provide support until long-term arrangements can be made.

G-4. CIVILIAN INFLUENCE ON ENEMY AND FRIENDLY OPERATIONS

Noncombatant civilians in an urban environment and the political setting influence both enemy and friendly operations.

a. **Enemy Operations.** These operations cover the spectrum from terrorism to well-organized military operations. The enemy may be special-purpose forces or insurgents that have the ability to operate freely throughout a city due to having the appearance of civilians. Conventional enemy forces may choose to occupy specific urban areas that civilians have not been able to evacuate. The swift occupation of a city may cause civilians to be trapped between opposing forces. This enhances the enemy's ability to defend.

b. **Friendly Operations.** A critical aspect of friendly operations is the ROE. Examples of different ROEs that US forces used during urban battles are Aachen during World War II in 1944 and Panama City "Just Cause" in 1990. Aachen typified ROE that permitted the free use of most munitions to eliminate the enemy. Panama City, on the other hand, showed US forces operating under very restrictive ROE.

(1) Offensive operations by friendly forces must consider the potential use of precision-guided munitions to achieve identified objectives while avoiding unnecessary collateral damage. Precision operations also include sniper and countersniper operations by both special forces personnel and conventional forces.

(2) When civilian personnel are present or are thought to be present in the objective area, the rules of engagement must be identified and known by all personnel before engaging targets or entering and clearing a room or building.

(3) Psychological operations or civil affairs teams can help remove civilians before a battle starts. Once the objective area has been isolated, PSYOP teams can also be used to induce enemy personnel to surrender.

G-5. USE OF NONLETHAL WEAPONS DURING MOUT

Nonlethal weapons are discriminate weapons that are explicitly designed and employed to incapacitate personnel or materiel while minimizing fatalities and undesired damage to property and the environment. Nonlethal weapons are not guaranteed to be totally nonlethal anymore than lethal weapons are totally lethal. Some fatalities may result from employment of nonlethal weapons. The use of the term nonlethal is not intended to be misleading but to convey the intention to be able to achieve military objectives while greatly reducing fatalities.

a. Unlike weapons that permanently destroy targets through blast fragmentation or penetration, nonlethal weapons have one, or both, of the following characteristics:

(1) They use means other than physical destruction to prevent the target from functioning.

(2) They have relatively reversible effects. Even if they injure humans, the injured will eventually recover.

b. The infantry has had some nonlethal weapons for years. Other weapons represent new developing technology. Examples of nonlethal weapons are as follows:

(1) Riot control gases such as CS and CN.

(2) Incapacitating sprays such as Mace and Pepper Spray.

(3) Kinetic stun projectiles such as rubber bullets, wooden baton rounds, and beanbag or ringfoil grenades.

(4) Rigid, sticky, or disorienting foams.

(5) Superlubricants.

(6) Flash and bang disruption devices.

(7) Acoustic disruption devices.

c. The Army's higher echelons are paying increased attention to nonlethal weapons for the following reasons:

(1) Growing conviction about their potential military utility.

(2) Political sensitivity.

(3) New constraints imposed by arms control.

(4) Increasing interest by US allies and outside organizations concerned with international security.

(5) Recent advances in enabling technologies related to nonlethal weapons.

(6) Emerging missions needing better nonlethal solutions such as crowd control and OOTW in urban areas.

d. Nonlethal weapons provide commanders with additional options between no use of military force at all and the use of lethal force. They may be more appropriate for some missions than lethal weapons. Nonlethal weapons can provide a more humane, discriminate, and reversible means of employing military force, with more precisely tailored and focused effects.

e. Unless constrained by orders from higher headquarters, US commanders are not obligated in any way to use only nonlethal weapons, or to try nonlethal weapons before resorting to more lethal means, in any military operation. Appropriate use of nonlethal weapons is normally authorized solely at the discretion of the commander on the scene. Although US forces may wish to avoid casualties, many situations require overwhelming lethal force as the most effective and efficient means to accomplish the mission. In the final result, a swift victory by overwhelming force may actually involve fewer casualties on both sides.

f. However the commander chooses to use nonlethal force, its use should be in such a way that it would minimize additional risk to friendly forces. The right to use lethal force for self-defense against a deadly threat is unaffected by any earlier choice of nonlethal weapons to achieve mission objectives.

APPENDIX H

URBAN BUILDING ANALYSIS

As in other types of operations, success in urban combat depends largely on the ability to analyze the military aspects of soldiers' terrain. This appendix discusses in greater detail building analysis. Soldiers must be able to recognize certain terrain features when evaluating urban terrain. They must also be able to distinguish between mass-construction and framed buildings.

H-1. TYPES OF MASS-CONSTRUCTION BUILDINGS

Mass-construction buildings are those in which the outside walls support the weight of the building and its contents. Additional support, especially in wide buildings, comes from using load-bearing interior walls, strongpoints (called pilasters) on the exterior walls, cast-iron interior columns, and arches or braces over the windows and doors (Figure H-1). Modern types of mass-construction buildings are wall and slab structures such as many modern apartments and hotels, and tilt-up structures commonly used for industry or storage. Mass-construction buildings are built in many ways:

- The walls can be built in place using brick, block, or poured-in-place concrete.
- The walls can be prefabricated and "tilt-up" or reinforced-concrete panels.
- The walls can be prefabricated and assembled like boxes.

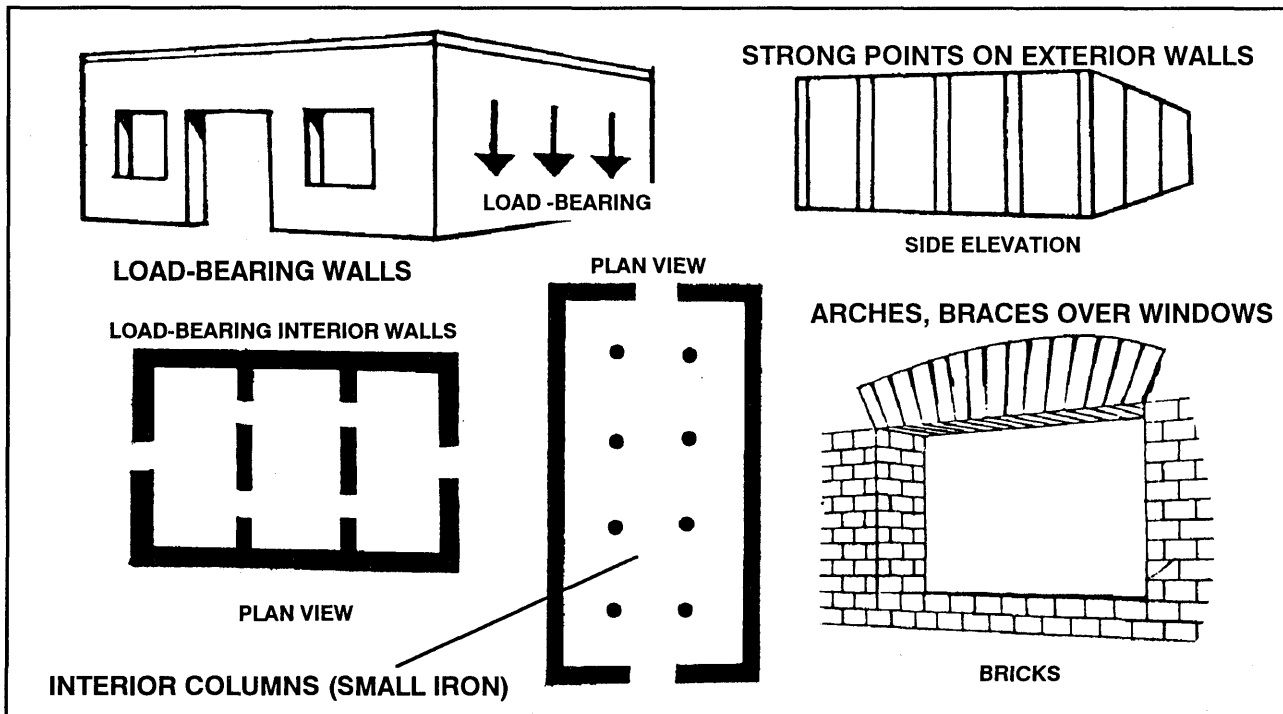


Figure H-1. Mass-construction buildings.

a. Brick buildings are the most common and most important of the mass-construction buildings. In Europe, brick buildings are commonly covered with a stucco veneer so that bricks do not show (Figure H-2). One of the most common uses of brick buildings is the small store. These buildings are found in all built-up areas but are most common in the core periphery (Figure H-3).

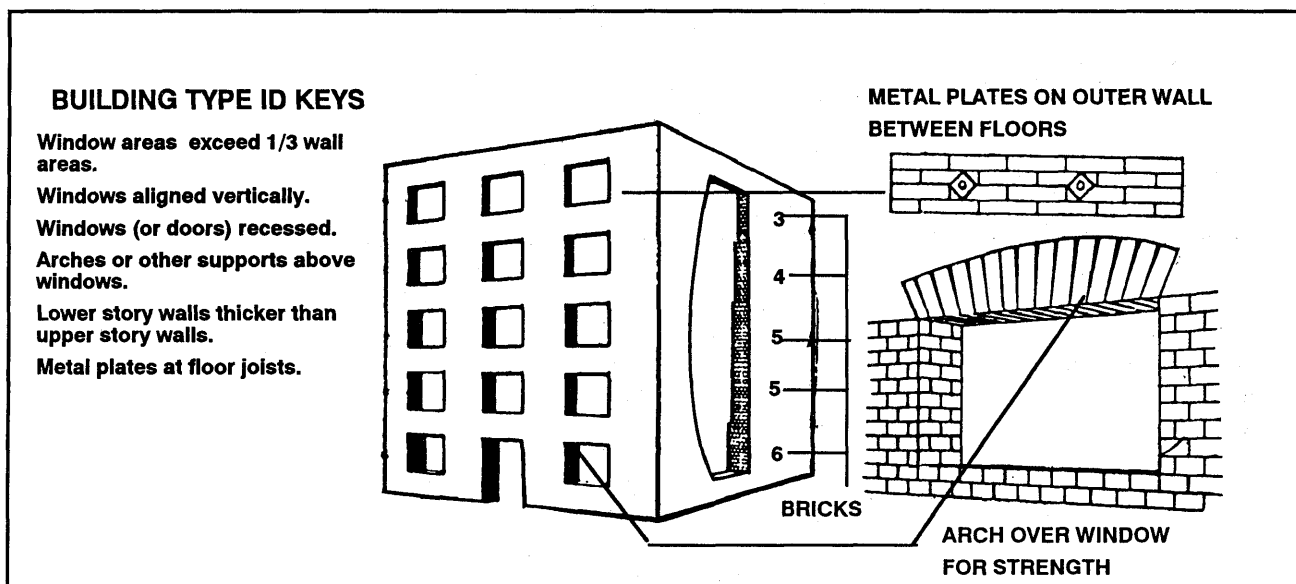


Figure H-2. Brick buildings.

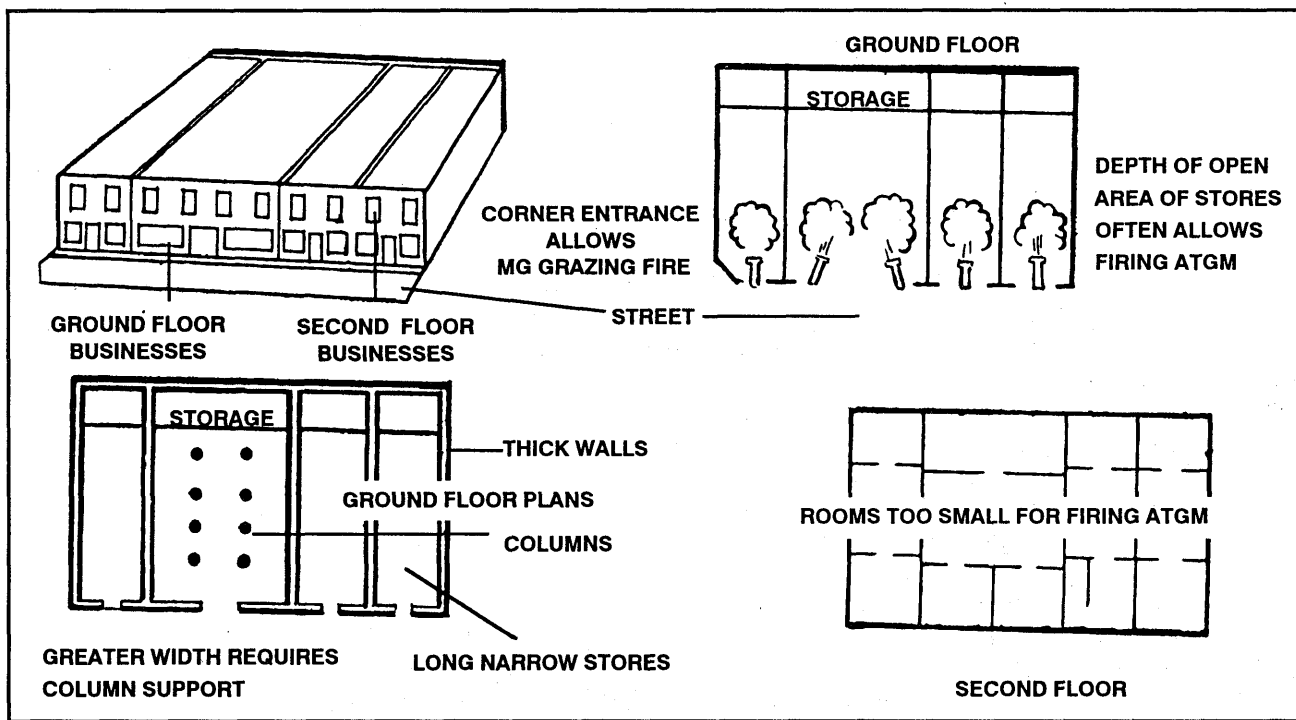


Figure H-3. Brick store.

b. Another common mass-construction building in industrial areas and along commercial ribbons is the warehouse. It is built of poured-in-place concrete reinforced with steel bars or of prefabricated walls that are "tilt-up." The walls of warehouses provide good cover, although the roof is vulnerable. The warehouses' large open bays permit firing of ATGMs and, because they are normally found in outlying areas, often afford adequate fields of fire for ATGMs. These buildings are built on slabs, which can normally support the weight of vehicles and can provide excellent cover and concealment for tanks (Figure H-4).

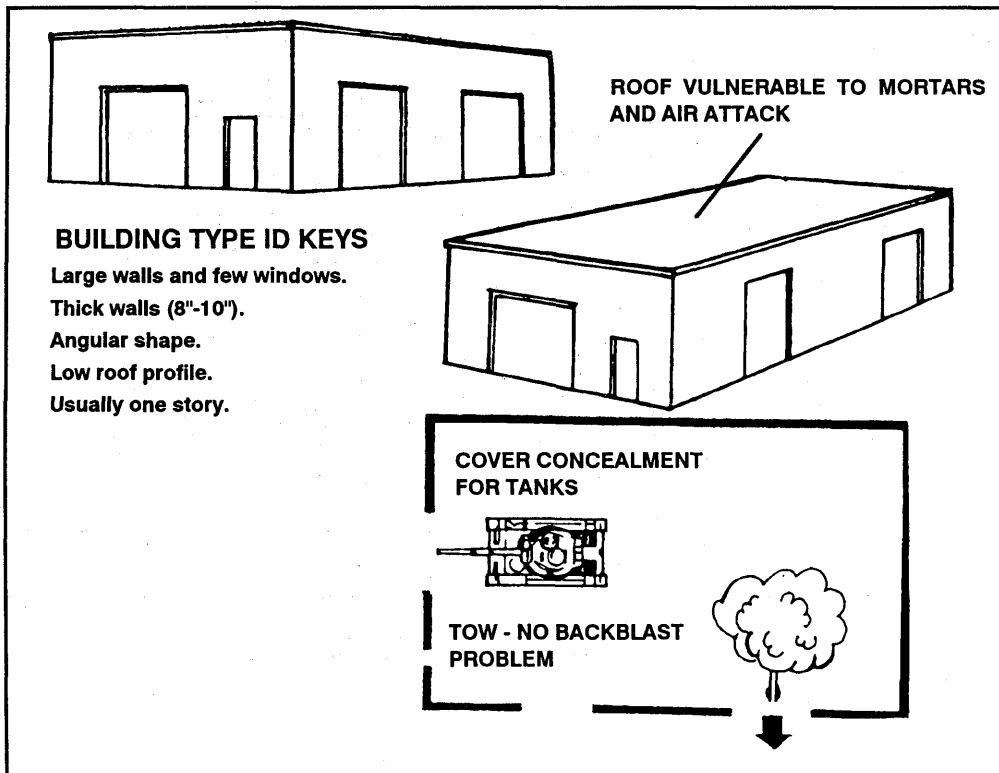


Figure H-4. Warehouse.

c. Another mass-construction building is the box-wall principle type. It is made from prefabricated concrete panels, which are made of 6- to 8-inch-thick reinforced concrete. The outside wall is often glass. The box-wall principle building provides good cover, except at the glass wall. The rooms are normally too small for ATGMs to be fired. A good circulation pattern exists from room to room and from floor to floor. These buildings are commonly used as hotels or apartments and are located in residential and outlying areas (Figure H-5, page H-4).

d. Public gathering places (churches, theaters) are mass-construction buildings with large, open interiors. The walls provide good cover, but the roof does not. The interior walls are not load-bearing and are normally easy to breach or remove. These buildings have adequate interior space for firing ATGMs. They are often located next to parks or other open areas and, therefore, have fields of fire long enough for ATGMs. Public gathering places are most common in core, core periphery, residential, and outlying high-rise areas (Figure H-6, page H-4).

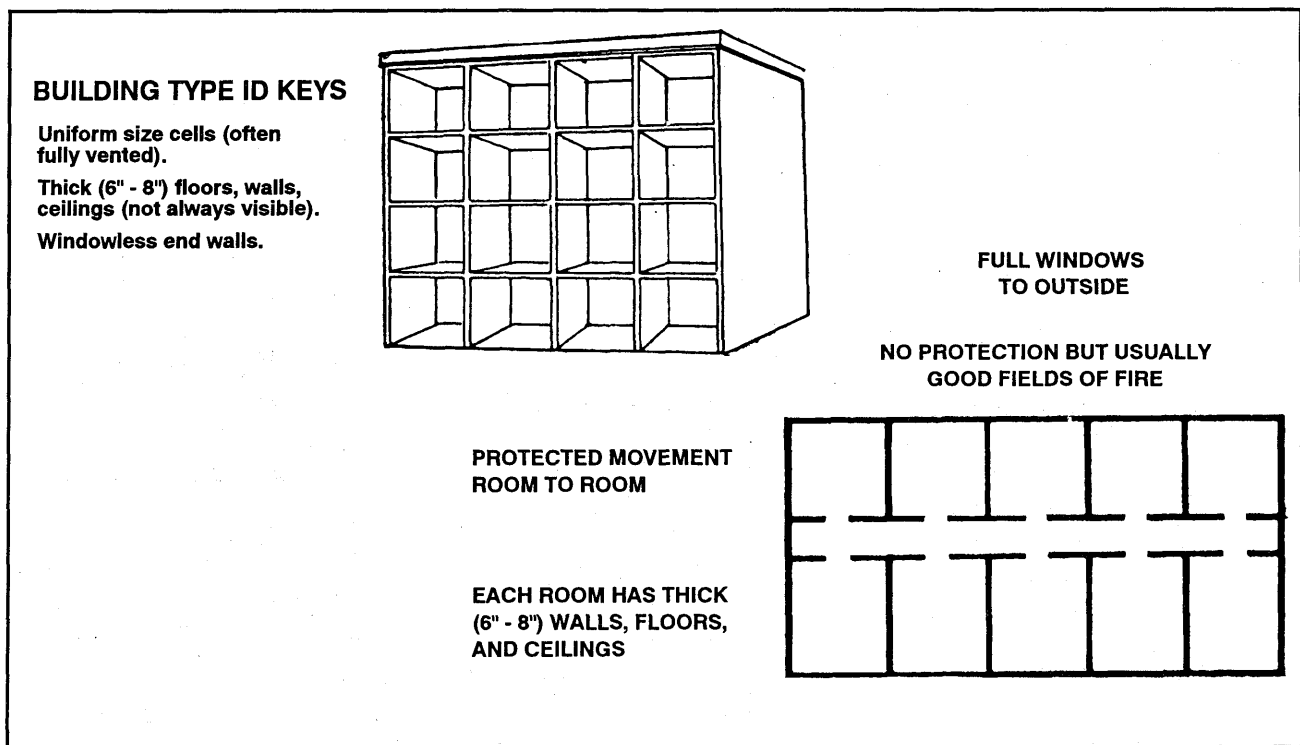


Figure H-5. Box-wall principle building.

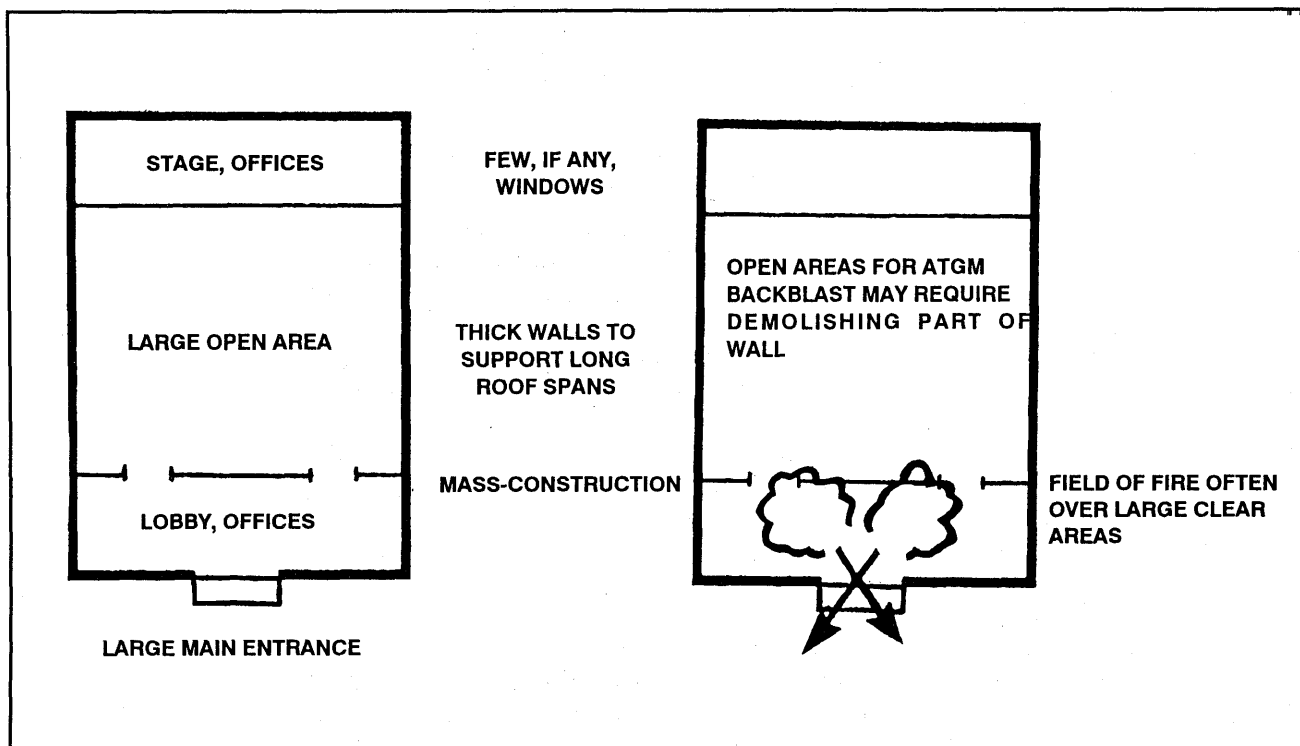


Figure H-6. Public gathering places.

H-2. TYPES OF FRAMED BUILDINGS

Framed buildings are supported by a skeleton of columns and beams and are usually taller than frameless buildings (Figure H-7). The exterior walls are not load-bearing and are referred to as either heavy clad or light clad. Another type of framed building often found in cities is the garage, which has no cladding.

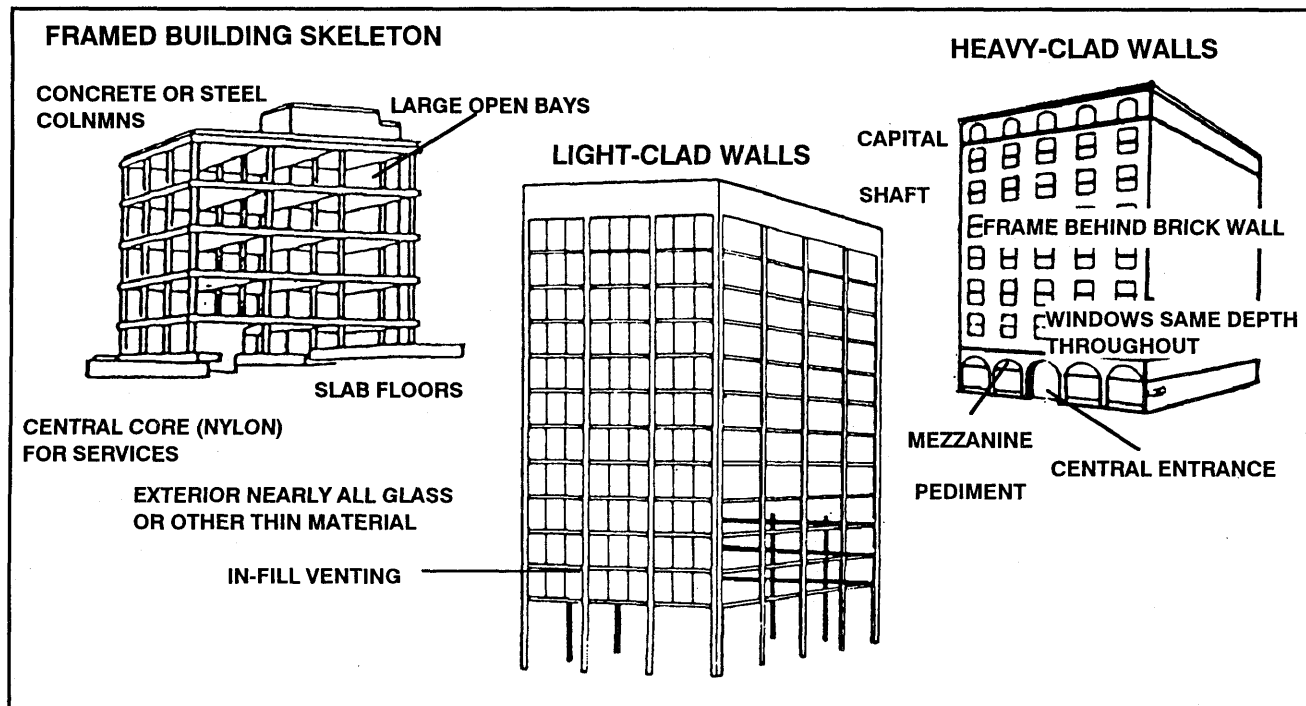


Figure H-7. Framed buildings.

a. Heavy-clad buildings were common when framed buildings were first introduced. Their walls are made of brick and block that are sometimes almost as thick as frameless brick walls, although not as protective. Heavy-clad framed buildings are found in core and core periphery areas. They can be recognized by a classic style or architecture in which each building is designed with three sections—the pediment, shaft, and capital. Unlike the brick building, the walls are the same thickness on all floors, and the windows are set at the same depth throughout. Often the frame members (the columns) can be seen, especially at the ground floor. The cladding, consisting of layers of terra cotta blocks, brick, and stone veneer, does not provide as good a cover as the walls of brick buildings. It protects against small-arms fire and light shrapnel but does not provide much cover against heavy weapons (Figure H-8, page H-6).

(1) The floor plans of these buildings depend upon their functions. Office buildings normally have small offices surrounding an interior hall. These offices have the same dimensions as the distance between columns (some large offices are as large as two times the distance between columns). These rooms are too small to permit firing of ATGMs but do provide some cover for snipers or machine gunners (Figures H-9 and H-10, page H-6).

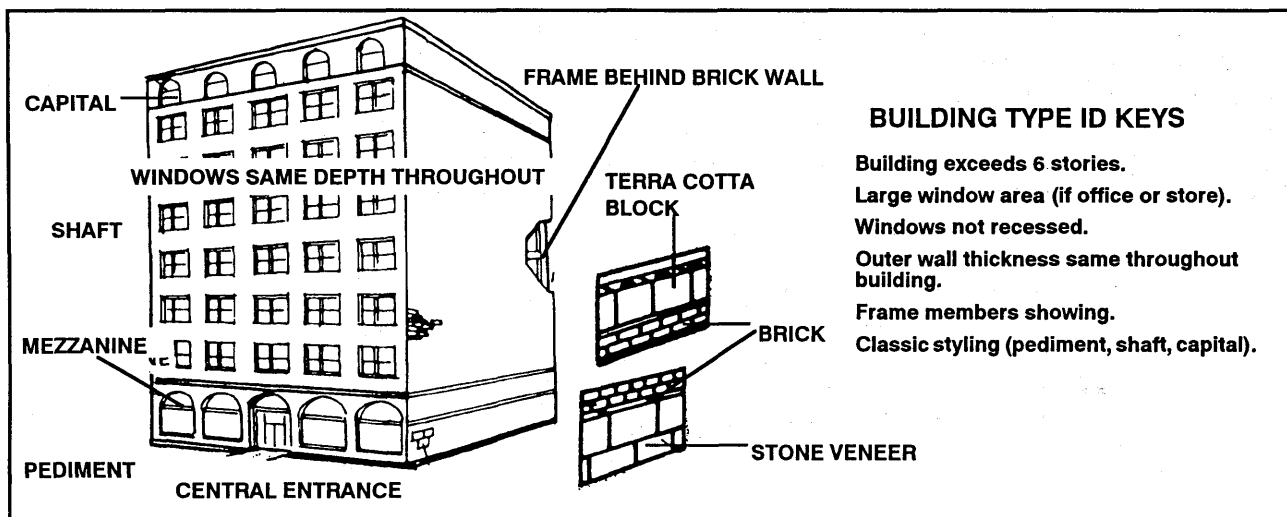


Figure H-8. Heavy-clad framed building.

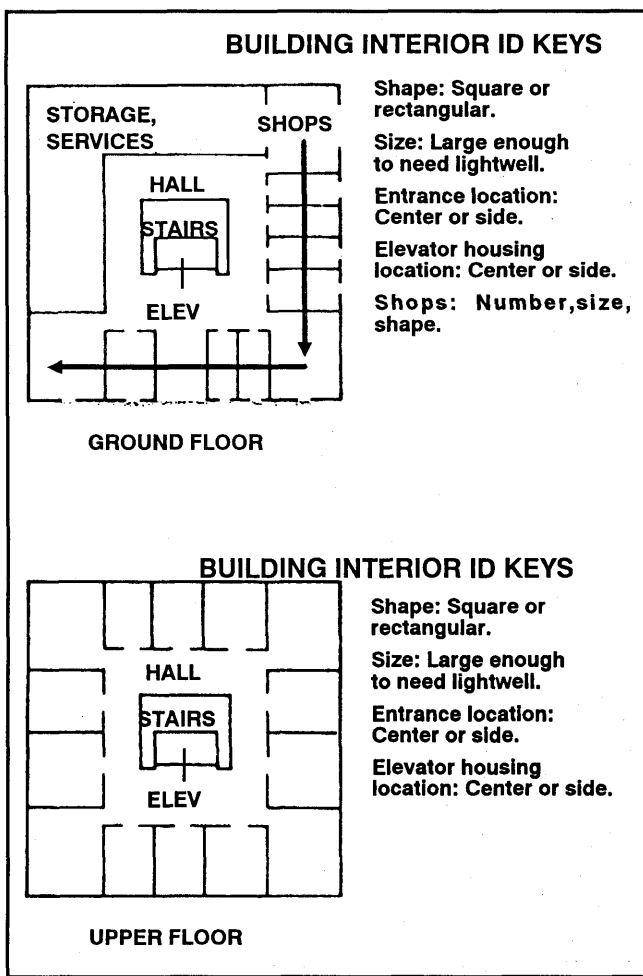


Figure H-9. Floor plan of heavy-clad framed office building.

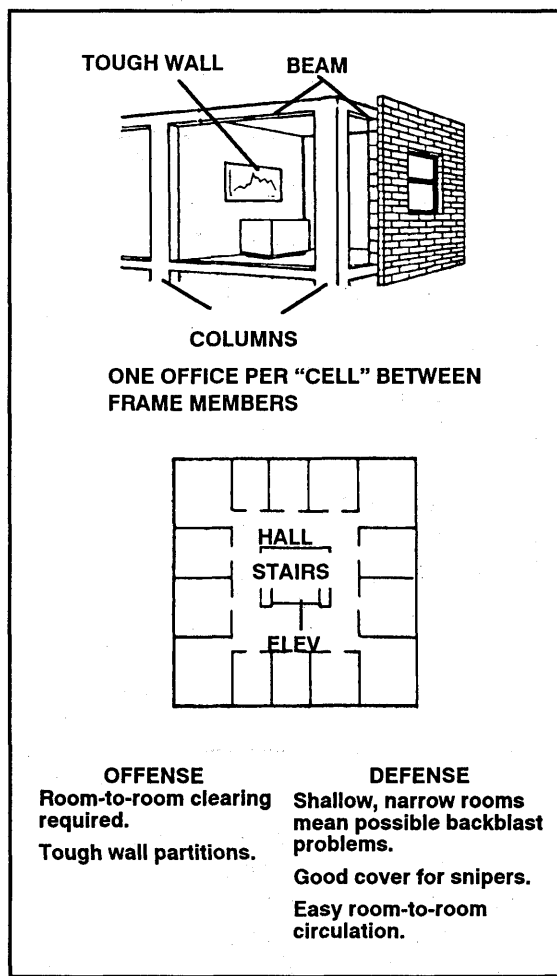


Figure H-10. Heavy-clad framed office.

(2) Department stores normally have large, open interiors (Figure H-11). Such areas permit firing ATGMs (if there are adequate fields of fire). Often a mezzanine level with a large backblast area permits firing down onto tanks. Steel fire doors often exist between sections of the store. The steel fire doors are activated by heat. Once closed, they are difficult to breach or force open, but they effectively divide the store into sections (Figure H-12).

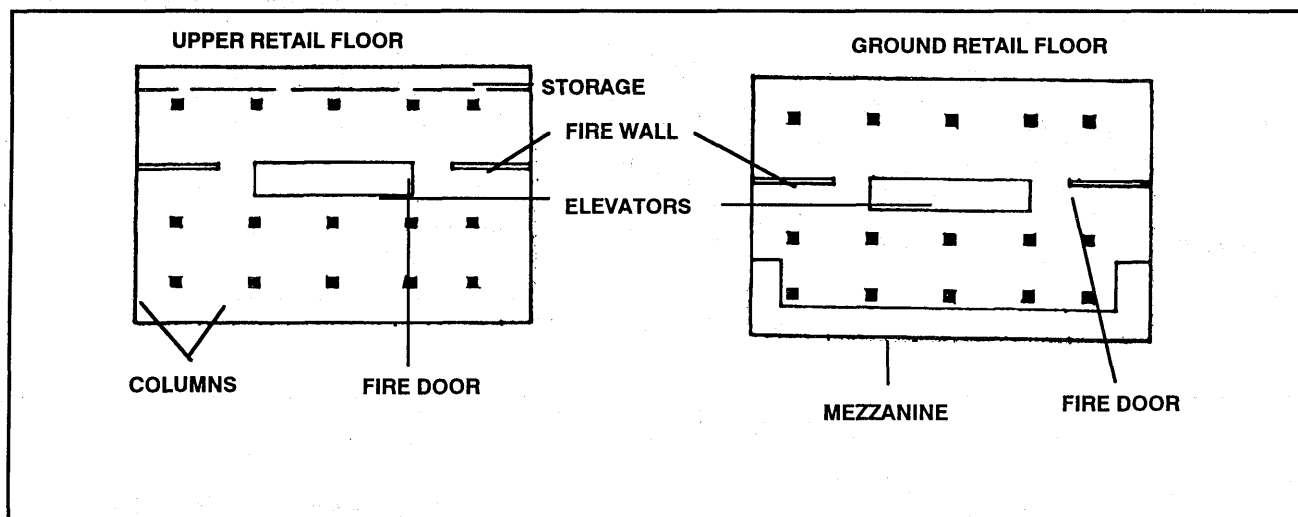


Figure H-11. Heavy-clad framed department store.

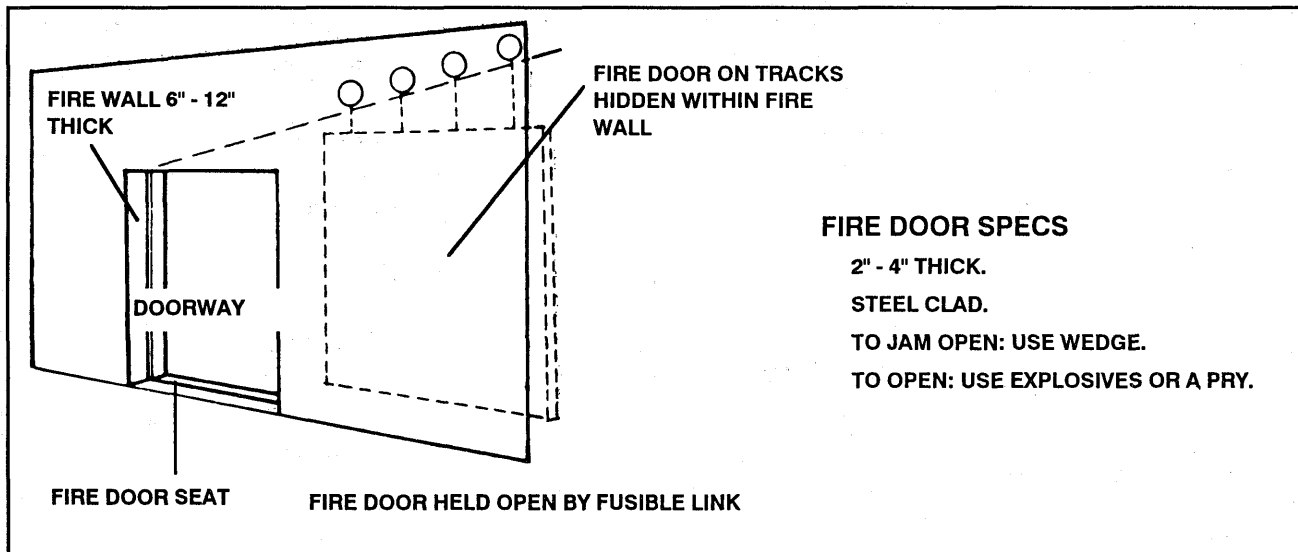


Figure H-12. Fire wall and fire door.

(3) Another type of heavy-clad framed building is used as a high-rise factory (Figure H-13, page H-8). Such buildings are normally easily recognized because the concrete beams and columns are visible from the outside. They are usually located in older industrial areas. The large windows and open interior favor the use of ATGMs. Because the floors are often made to support heavy machinery, this building provides good overhead cover.

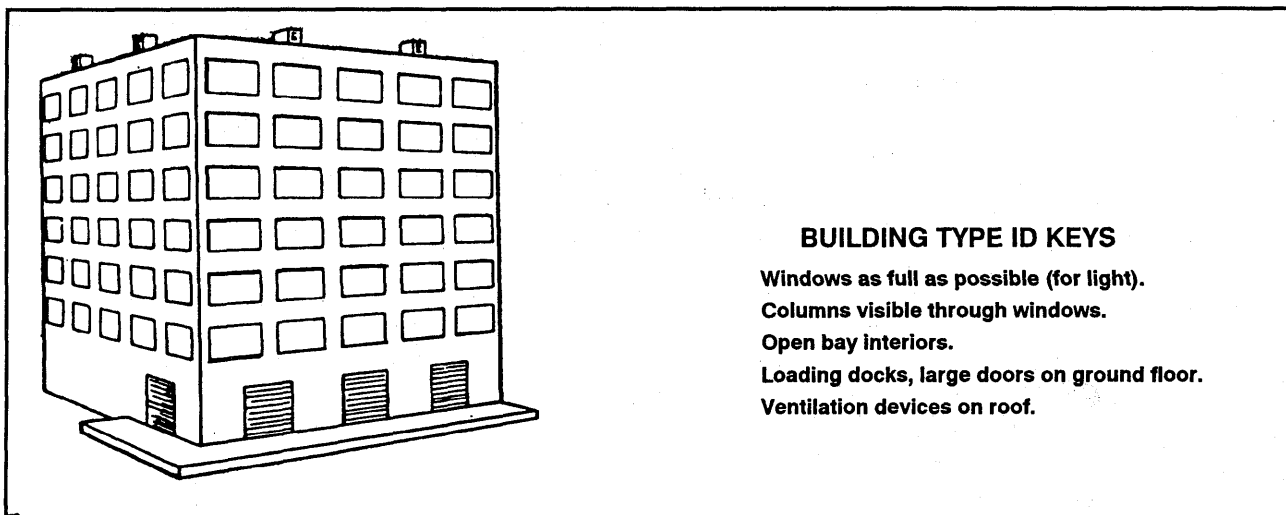


Figure H-13. High-rise factory.

b. Light-clad buildings are more modern and may be constructed mostly of glass (Figure H-7). Most framed buildings built since World War II are light-clad buildings. They are found in both core and outlying high-rise regions. Their walls consist of a thin layer of brick, lightweight concrete, or glass. Such materials provide minimal protection against any weapon. However, the floors of the buildings are much heavier and provide moderate overhead cover (Figure H-14). The rooms in light-clad framed buildings are much bigger than those in heavy-clad. This feature, along with the fact that the buildings usually stand detached from other buildings, favors the employment of ATGMs. The interior partitions are thin, light, and easy to breach (Figure H-15).

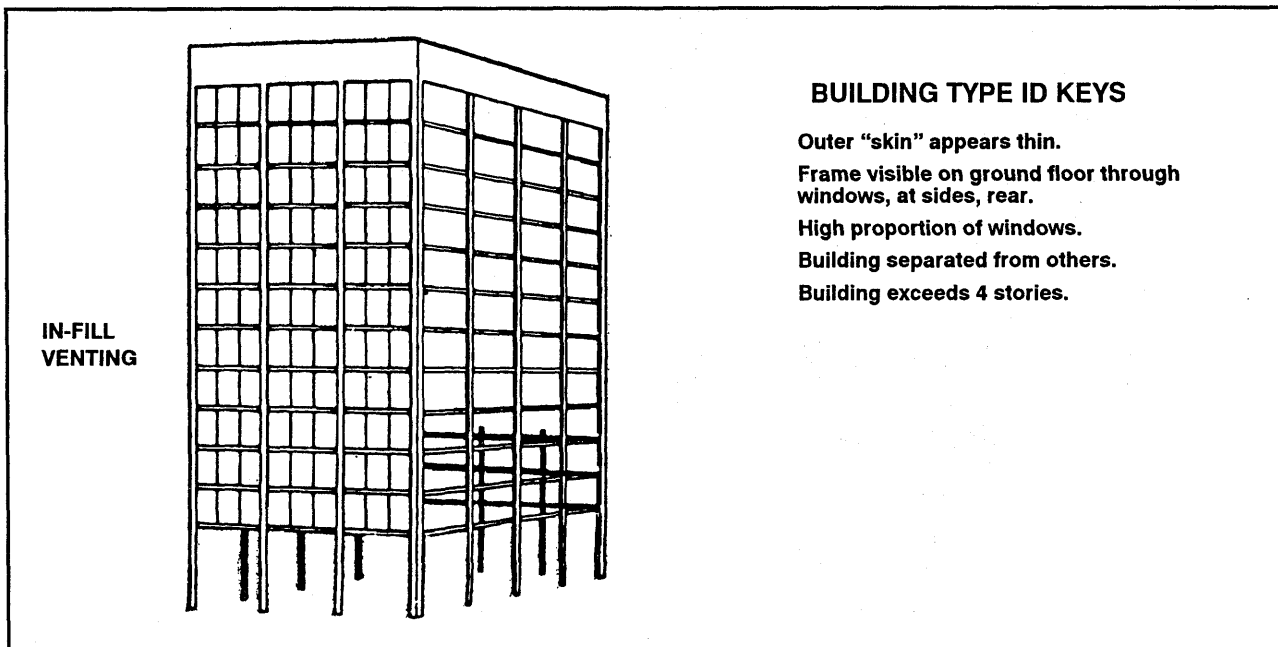


Figure H-14. Light-clad framed building.

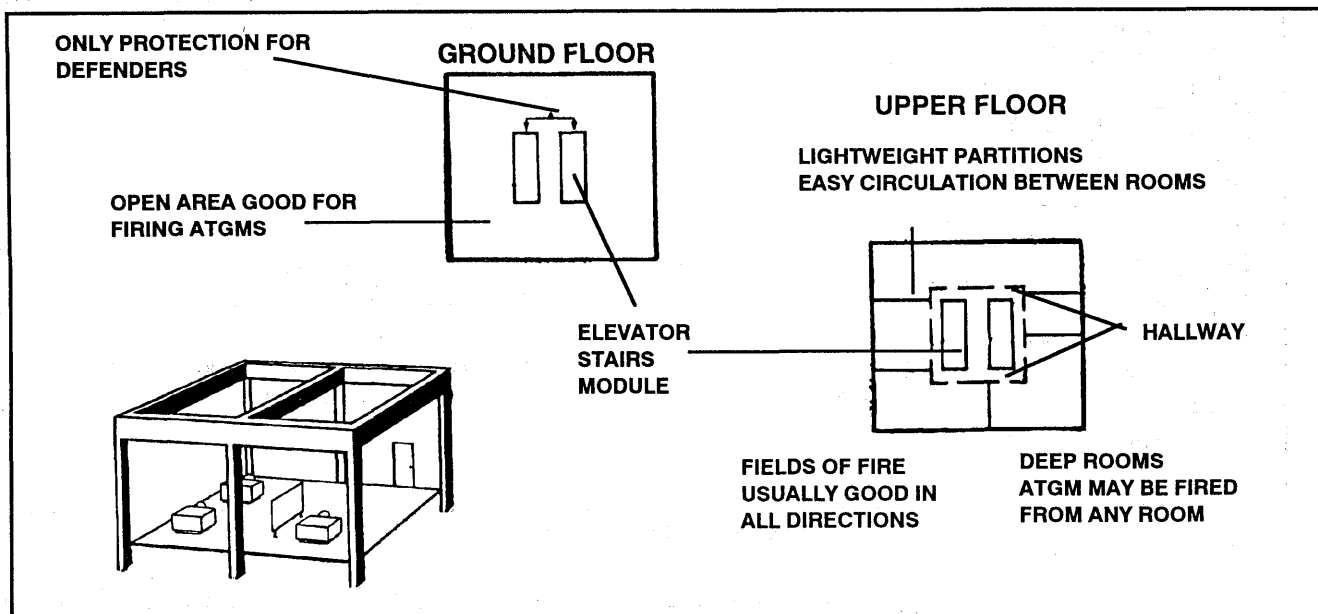


Figure H-15. Light-clad framed room.

c. The garage is one of the few buildings in an urban area in which all floors support vehicles. It provides a means to elevate vehicle-mounted TOWs, and the open interiors permit firing of ATGMs. Garages are normally high enough to provide a 360-degree field of fire for antiaircraft weapons. For example, a Stinger could hide under the top floor of the garage, come out to engage an aircraft, and then take cover again (Figure H-16).

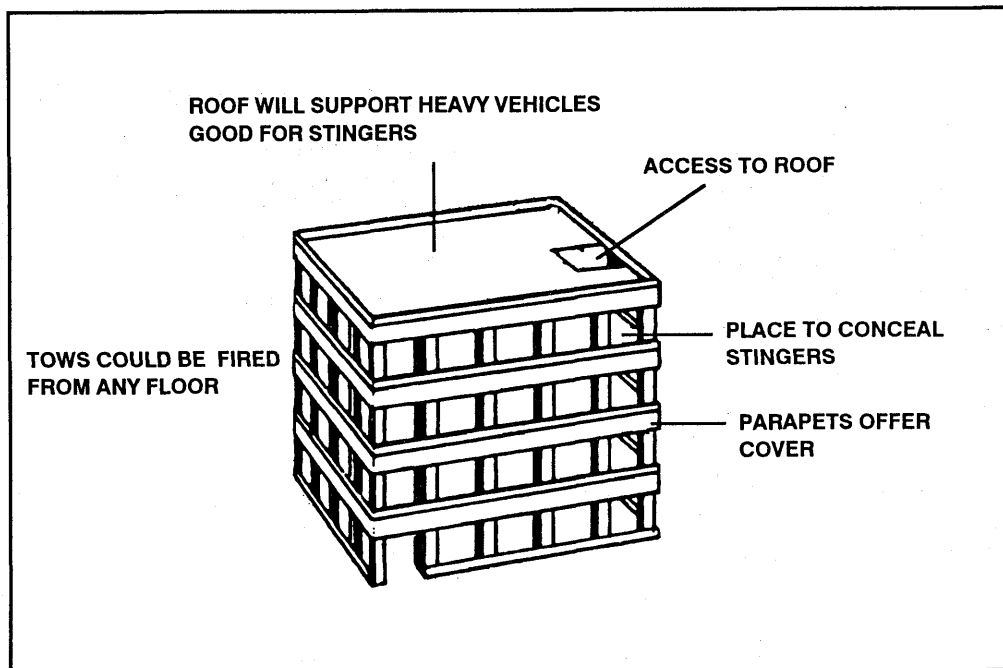


Figure H-16. Garage.

H-3. FLOOR PLANS

Floor plans in buildings follow predictable patterns. One of the factors that determines floor plans is building shape (Figure H-17). The basic principle governing building shape is that rooms normally have access to outside light. This principle helps to analyze and determine the floor plans of large buildings.

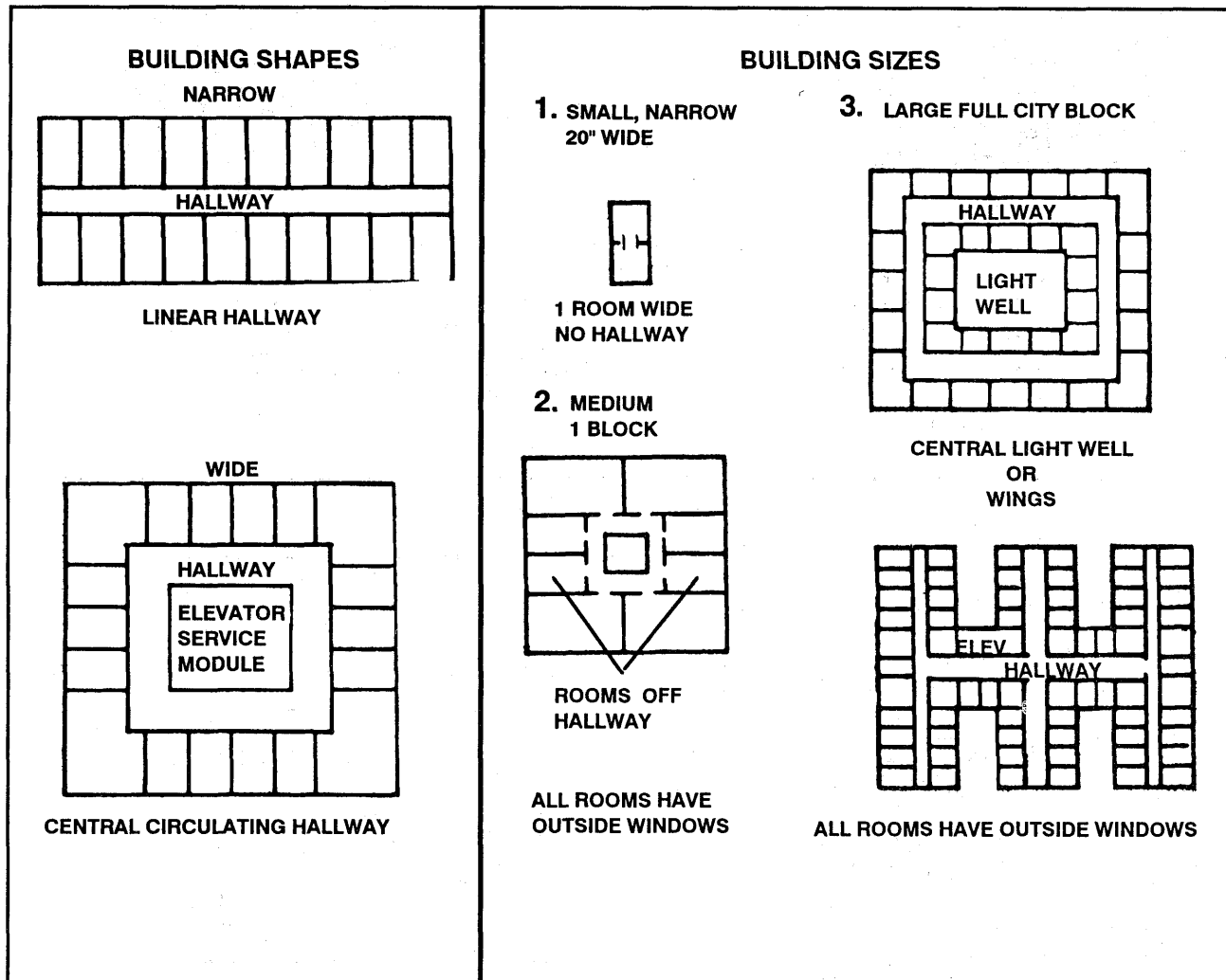


Figure H-17. Building shapes and sizes.

H-4. RESIDENTIAL AREAS

The two basic types of houses in the western world are located in and around cities and in rural areas. City houses are normally mass-construction brick buildings. Rural buildings in the continental US, South America, and Southeast Asia are commonly made of wood. In continental Europe, Southwest Asia, and sub-Saharan Africa, where wood is extremely scarce, rural buildings are normally constructed of concrete blocks (Figure H-18).

a. Another common type of building structure in cities with European influences is called the Hof-style apartment building (Figure H-19).

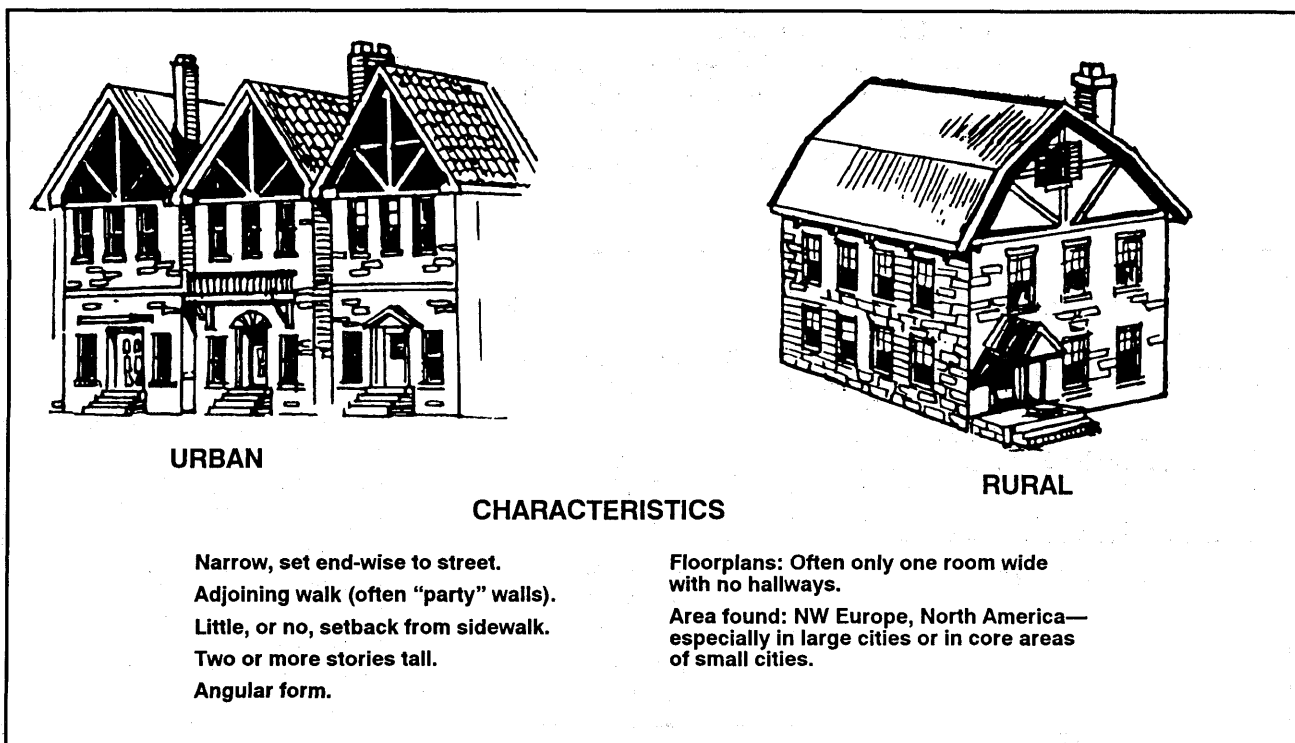


Figure H-18. Types of housing.

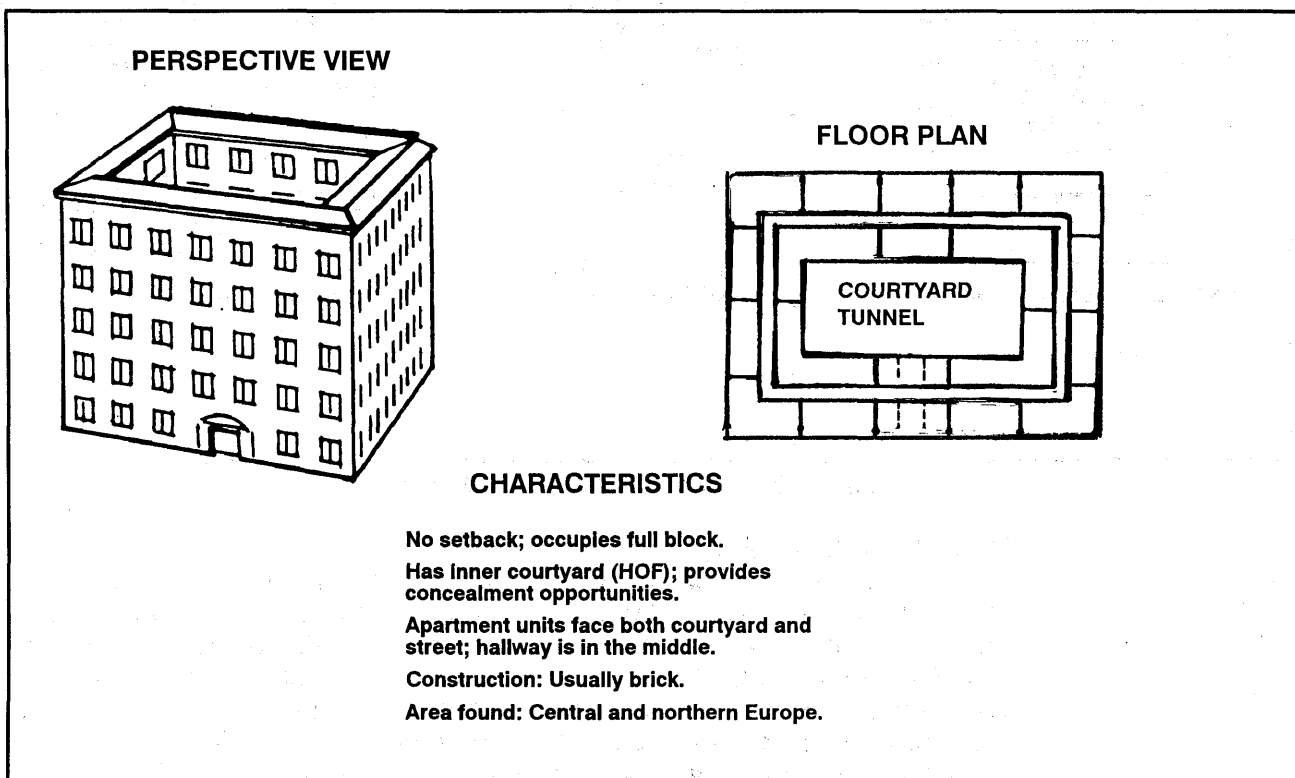


Figure H-19. Hof-style apartment building.

b. In the Mideast and tropical regions, the most common housing is the enclosed courtyard. Houses are added one to another with little regard to the street pattern. The result is a crooked, narrow maze, which is harder to move through or fire in than dense European areas (Figure H-20).

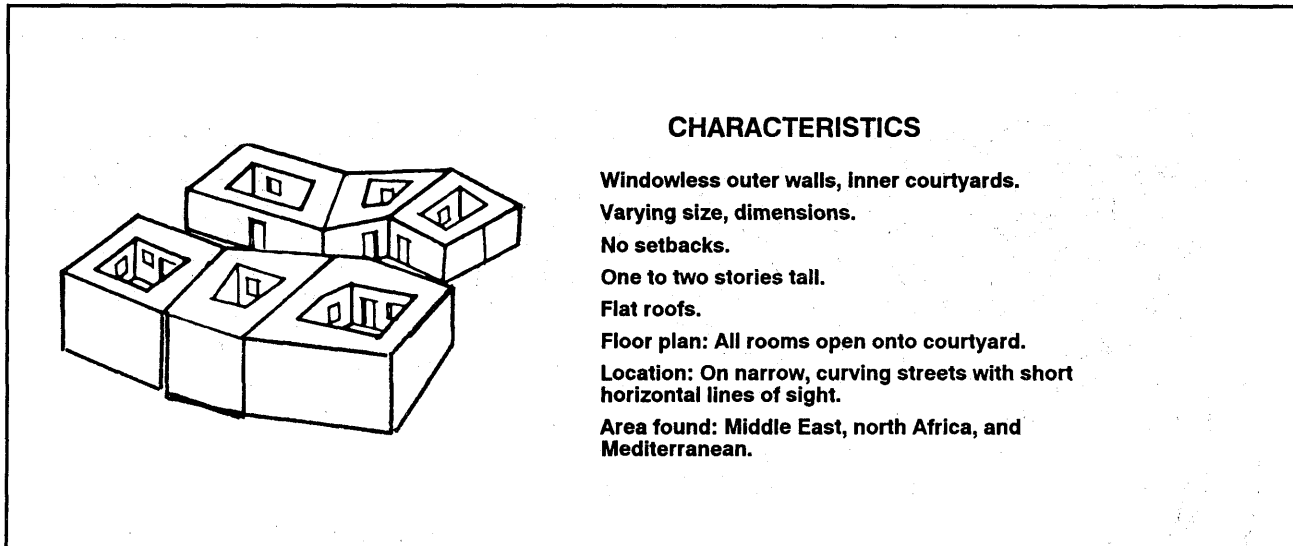


Figure H-20. Enclosed courtyard.

H-5. CHARACTERISTICS OF BUILDINGS

Certain characteristics of both mass-construction and framed buildings can be helpful in analyzing a built-up area. Leaders can use Table H-1 to determine how to defend or attack a certain building given the unit's available weapon systems.

TYPE OF CONSTRUCTION	BUILDING MATERIAL	HEIGHT (STORIES)	AVERAGE WALL THICKNESS (CM)
Mass	Stone	1 to 10	75
Mass	Brick	1 to 3	22
Mass	Brick	3 to 6	38
Mass	Concrete block	1 to 5	20
Mass	Concrete wall and slab	1 to 10	22 to 38
Mass	Concrete "tilt-ups"	1 to 3	18
Framed	Wood	1 to 5	3
Framed	Steel (heavy cladding)	3 to 50	30
Framed	Concrete/steel (light cladding)	3 to 100	2 to 8

Table H-1. Characteristics of buildings.

H-6. DISTRIBUTION OF BUILDING TYPES

Certain types of buildings dominate certain parts of a city, which establishes patterns within a city. Analysis of the distribution and nature of these patterns has a direct bearing on military planning and weapon selection (Figure H-21).

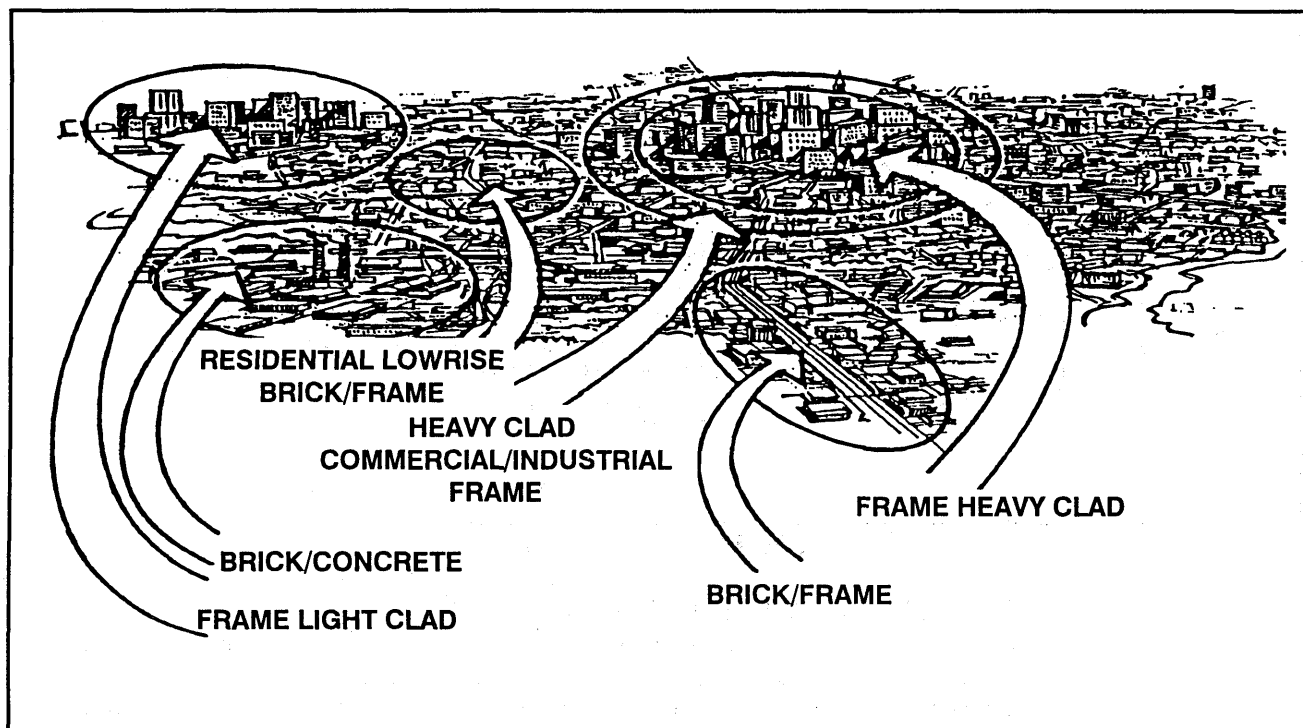


Figure H-21. Distribution of building types.

a. Mass-construction buildings are the most common structures in built-up areas, forming about two-thirds of all building types. Brick structures account for nearly 60 percent of all buildings, especially in Europe.

b. Steel and concrete framed multistory buildings have an importance far beyond their one-third contribution to total ground floor area. They occupy core areas—a city's most valuable land—where, as centers of economic and political power, they have a high potential military significance.

c. Open space accounts for about 15 percent of an average city's area. Many open spaces are grass-covered and are used for parks, athletic fields, and golf courses; some are broad, paved areas. The largest open spaces are associated with suburban housing developments where large tracts of land are recreation areas.

d. Streets serving areas consisting of mostly one type of building normally have a common pattern. In downtown areas, for example, high land values result in narrow streets. Street widths are grouped into three major classes: 7 to 15 meters, located in medieval sections of European cities; 15 to 25 meters, located in newer planned sections of most cities; and 25 to 50 meters, located along broad boulevards or set far apart on large parcels of land. When a street is narrow, observing or firing into windows of a building across the street can be difficult because an observer is forced to look along

the building rather than into windows. When the street is wider, the observer has a better chance to look and fire into the window openings (Figure H-22).

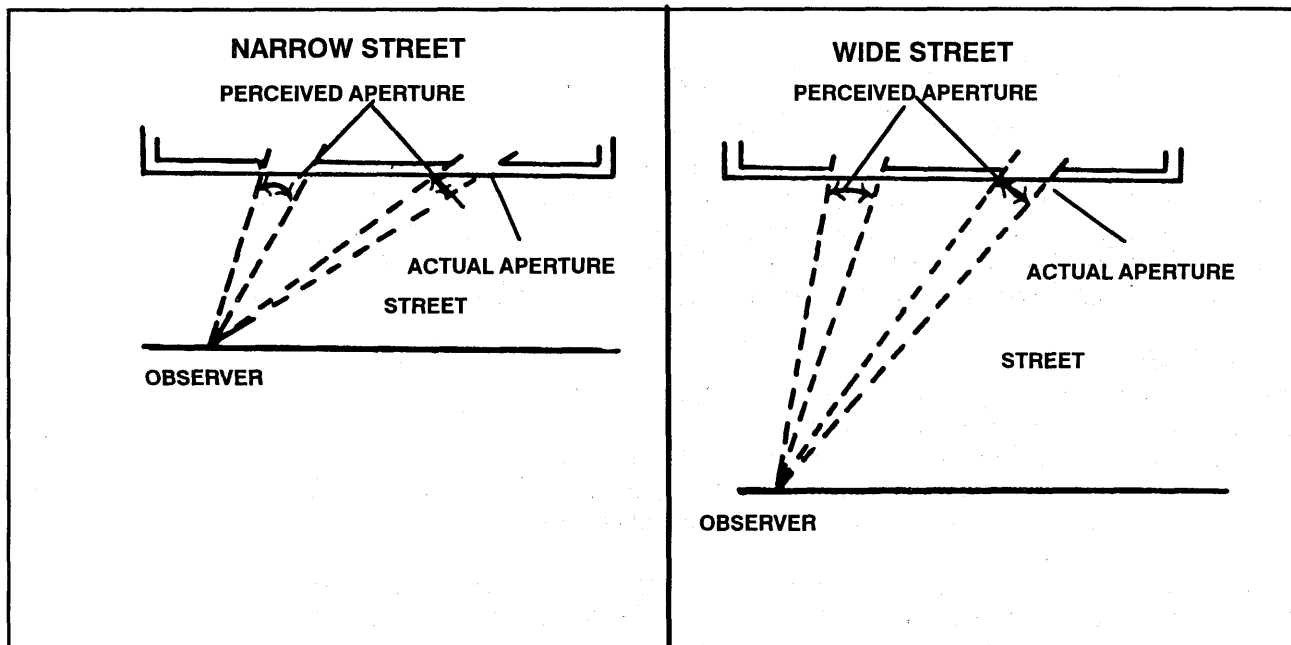


Figure H-22. Line-of-sight distances and angles of obliquity.

APPENDIX I

LIMITED VISIBILITY OPERATIONS UNDER MOUT CONDITIONS

With the rapid development of night vision devices throughout the world and AirLand operations doctrine that mandates continuous operations, US forces will continue to fight in built-up areas regardless of the weather or visibility conditions. To be successful, leaders must anticipate the effects of limited visibility conditions on operations and soldiers.

I-1. ADVANTAGES

When fighting in built-up areas during periods of limited visibility, attacking or defending forces have several advantages.

a. In most cases, US forces have a technological advantage in thermal imagery and light intensification over their opponents. This enables US forces to identify, engage, and destroy enemy targets before detection by the enemy.

b. AirLand operations stress continuous operations, day and night. This allows the attacking forces to conclude the battle decisively in a shorter period of time. It also allows the attacker to retain the initiative.

c. Direct-fire target ranges in the MOUT environment are greatly reduced. During periods of limited visibility, effective target acquisition ranges are even further reduced. This enables attacking forces to close to shorter ranges, thus increasing the lethality and accuracy of weapons. Attacking forces can also take advantage of the enemy's reduced visibility and can engage before being detected with thermal imagery or light intensification devices.

d. Air assault operations are best conducted during periods of limited visibility, since the enemy's air defenses are degraded.

e. Attacking during periods of limited visibility gives the attacker a greater chance of surprise.

I-2. DISADVANTAGES

When fighting in built-up areas during limited visibility, attacking and defending forces also face some disadvantages.

a. Command and control is difficult in any operation in a built-up area, and periods of limited visibility increase this difficulty.

b. Soldiers have an instinctive tendency to form groups during limited visibility. Constant attention must be given to prevent the soldiers from "bunching up."

c. Due to the low visibility and the characteristics of built-up areas, soldiers become disoriented easily.

d. Target identification becomes difficult in limited visibility conditions. Depending on the individual, the soldier may fire at anything he sees, or he may hesitate too long before firing. This is one of the leading causes of fratricide, so leaders must pay close attention to soldiers' target engagement.

I-3. FRATRICIDE AVOIDANCE

The risk of fratricide is much greater during periods of limited visibility. The key to avoiding fratricide is situational awareness by leaders and individuals coupled with training. Other considerations include:

- a. Graphic control measures should be clearly defined and obvious. Examples include distinct buildings, large boulevards, rivers, and so forth.
- b. Leaders must exercise firm control when engaging targets. Movements should also be tightly controlled.
- c. Cleared rooms and buildings should be distinctly marked to identify cleared areas and friendly troops to any base of fire supporting the maneuver.
- d. Visible markers (for example, glint tape or thermal strips) should be attached to individual soldiers.
- e. Far and near recognition symbols should be used properly.
- f. Units using close air support must exercise firm control and direct their firing. Failure to do so may lead to the pilot becoming disoriented and engaging friend and foe alike.

**I-4. URBAN ENVIRONMENTAL EFFECTS
ON NIGHT VISION DEVICES**

The characteristics of built-up areas affect standard US NVDs and sights differently than do open areas. This may cause some confusion for soldiers operating during limited visibility, since the images they receive through their NVDs are unusual.

- a. Since most built-up areas have electric power, street lights and or building lights "white out" any light intensification devices unless the power is disrupted.
- b. The chance that fires will be burning in the area of operations is high. This causes problems not only for light intensification devices, but possibly for thermal devices as well.
- c. Subterranean areas and the interiors of buildings will not have ambient light if the power is off. Passive NVDs must have an artificial light source, such as infrared, to provide enough ambient light for the devices to work.
- d. The many reflective surfaces found in built-up areas may cause false images, especially for laser range finders and laser target designators.
- e. Large amounts of dust particles suspended in the air prevent thermal imaging devices from seeing through the dust cloud.
- f. Smoke also affects NVDs similar to the way dust does.
- g. Fog degrades long-range target acquisition from thermal sights, which may cause problems for any overwatching or supporting elements.
- h. Weapons flashes within enclosed areas appear to be much brighter. This causes soldiers to lose their night vision and washes out light intensification devices.

I-5. CONSIDERATIONS

The environment of built-up areas presents special challenges and considerations during periods of limited visibility.

- a. The use of glint tape, thermal tape, budd lights, or chemlites is an important consideration. These can be used to mark the forward line of troops, casualties, cleared buildings and rooms, weapons positions, and

individual soldiers. Their use must be clearly addressed in the unit's TAC SOP. When markers are used for extended periods, their meanings should change since the enemy may be able to capture or manufacture and use these marking devices.

b. The use of tracer and incendiary ammunition may be restricted to prevent fires. Also, the light of the fires "whites out" light intensification night vision devices and may interfere with thermal devices.

c. The control of power stations may be essential to operations during limited visibility. This enables friendly forces to control, to a degree, background illumination. Shutting off the power to the street lights is preferable to shooting the lights out. Commanders must balance the trade-off between force protection and maintaining law and order after the battle is over. During cold weather, the control of power stations may be critical for the welfare of the civilian population.

d. The identification between friendly soldiers, noncombatant civilians, and enemy troops becomes more difficult during limited visibility operations.

e. The location of the source of sounds becomes more difficult due to the natural echoing in built-up areas and the tendency of sounds to carry farther at night.

f. The location of booby traps and obstacles also becomes more difficult at night. Movement rates are slower than during normal visibility.

I-6. SPECIAL EQUIPMENT

Fighting during periods of limited visibility requires some specialized equipment to maximize maneuver and target engagement.

a. As a rule, thermal imaging devices, such as the AN/PAS-7 IR viewer (LIN Y03104) and the Dragon IR sight AN/TAS-5 (LIN N23721), are better for limited visibility operations than light intensification devices such as the AN/PVS-7 (LIN N05482). Light intensification devices are easily washed out from background light, weapons flashes in enclosed areas, and fires. Thermal devices, while also affected by fires, are not as easily washed out.

b. The AN/PAQ-4 infrared aiming device (LIN A34938) is similar to its civilian laser aiming sight counterparts except it is not visible to the naked eye. Pen lights can also be attached to weapons to provide a quick sight picture, illuminate rooms and hallways, identify obstacles and booby traps, and identify friendly forces.

c. Other night sights for weapons include the AN/TVS-5 (LIN N04596) crew-served weapon night vision sight, the AN/PVS-4 (LIN N04734) individual weapons night vision sight, and the AN/UAS-11 (LIN N05050) night vision set. The AN/UAS-11, while not easily man-portable, has the advantage of an integral laser range finder. It is also a thermal sight similar to the TOW 2 AN/TAS-4 night sight.

d. Trip flares, flares, illumination from mortars and artillery, and spotlights (visible light or infrared) can be used to blind enemy NVDs or to artificially illuminate the battlefield (Figure I-1). (See FM 7-90 for more information on illumination from mortars and artillery.)

e. Spare batteries for the NVDs should be carried to keep the devices operational. Soft, clean rags should be used to clean the lenses.

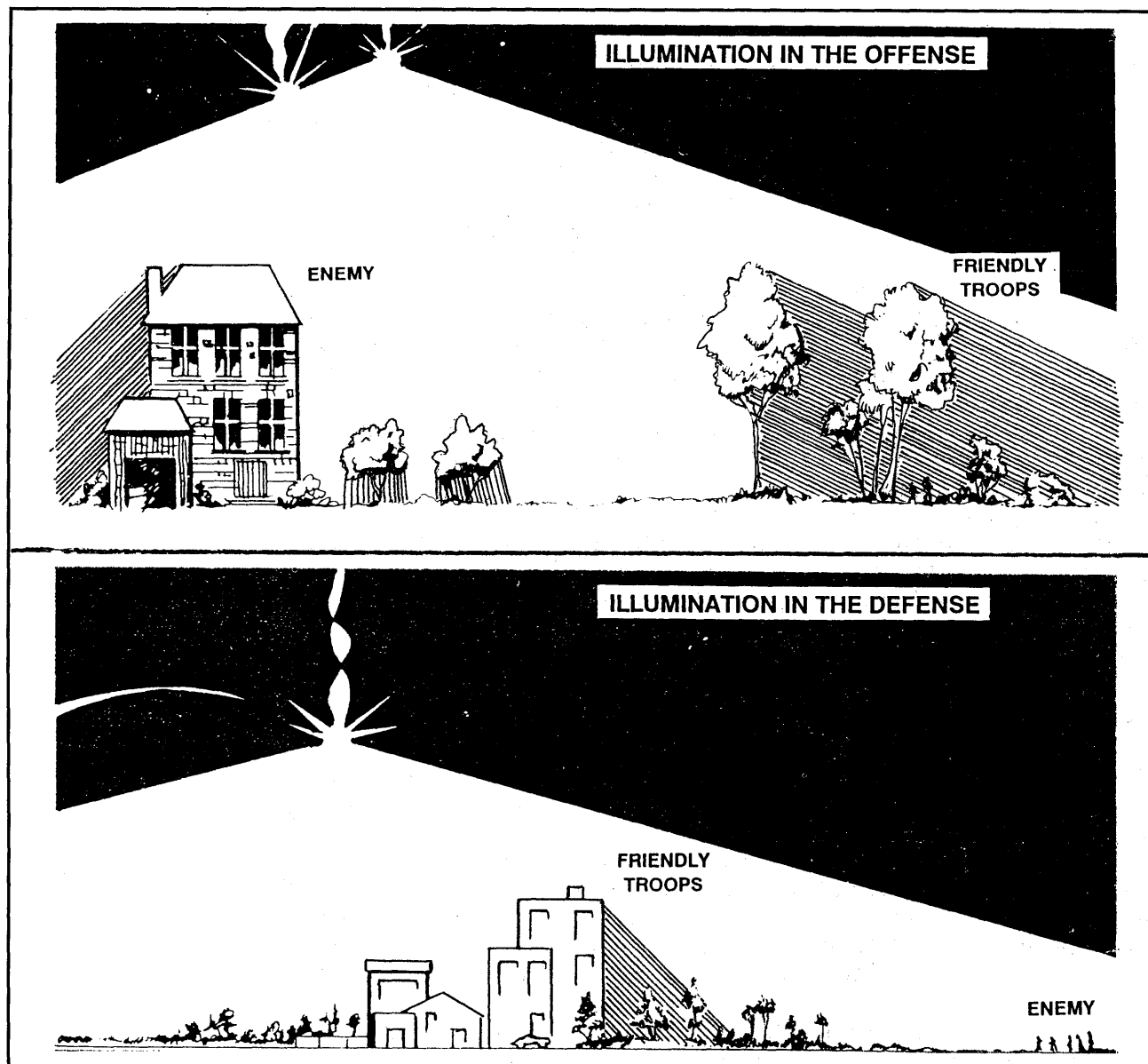


Figure I-1. Use of indirect fire illumination during MOUT.

I-7. COMBAT SUPPORT

Loss of synchronization is one of the major concerns to commanders and leaders during limited visibility operations under MOUT conditions. The concentration of forces and fires at the point of decision is facilitated by US forces' technological edge and by clear orders.

a. Any degradation of artillery fire will be due to the limited target acquisition assets. While the field artillery FOs and combat observation and lasing teams (COLTs) have thermal sights and laser range finders, most soldiers on the battlefield do not have devices that will enable them to accurately call for fire. The following are some devices and techniques to acquire targets for indirect fires.

(1) The AN/UAS-11 determines accurate coordinates with its thermal imaging sight coupled with a laser range finder. For the AN/UAS-11 to obtain accurate coordinates, the crew must first have an accurate location. The same technique can be used by any attached armor unit. The BFV can be used as well if it is equipped with a laser range finder.

(2) Preregistered TRPs are effective only if the TRPs can be observed and the observer has clear communications to the firing unit.

(3) Reflective surfaces found in built-up areas may affect laser designators.

(4) Counterfire radar should be employed to cover likely areas of enemy mortar, cannon, and rocket use. Because of the masking effect of built-up areas, counterfire radars are not normally emplaced within the built-up area.

b. Fixed-wing aviation assets face a lower ADA threat during periods of limited visibility. However, the need for command and control is greater to prevent fratricide. The best fixed-wing aircraft available for fire support is the AC-130 because of its target acquisition capabilities, deadly and accurate fire, and long loiter time.

c. Army aviation operates on similar limitations and considerations as fixed-wing aircraft. Most US Army attack helicopters have a forward-looking infrared (FLIR) night sight. Coupled with the slower speed and hover capability of the helicopter, Army aviation assets can deliver highly accurate and responsive fire on enemy targets. However, helicopters are more susceptible to enemy air defense artillery assets and, therefore, should only be employed where the enemy air defense threat is light. Commanders must identify clear land marks for the pilots to navigate to and from the objective.

d. ADA is significantly degraded during periods of limited visibility. Visual detection, identification, and range estimation are all difficult, if not impossible. Radar guidance systems have difficulty determining the target from ground clutter.

e. The lack of thermal imaging devices may hamper engineer units. Locating and clearing mines and booby traps also become more dangerous and difficult. The method of marking cleared lanes should be determined and coordinated in advance to avoid confusion with other limited visibility markers (glint tape, infrared strobe lights [budd lites], chemlites, and so forth).

f. Military intelligence relies primarily on human intelligence assets to gain information about the enemy in urban environments.

(1) GSR and REMs have limited use in the center of built-up areas. They are best employed on the outskirts to monitor traffic into and out of the built-up area. If necessary, GSR can be used to cover large open areas such as parks and public squares. REMs can be used in subterranean areas such as sewers and utility tunnels.

(2) Military intelligence units equipped with the AN/UAS-11 can use it in a variety of target acquisition and surveillance roles.

(3) Based on the time available before the operation or the urgency of need, satellite photographs of the built-up area may be available.

(4) Military intelligence officers at brigade level and below should obtain city maps of the area of operations. The normal 1:50,000 map scale is virtually useless to soldiers fighting in a built-up area. The Defense Mapping Agency maintains various city maps with either a 1:10,000 or 1:12,500 scale. These maps are created based on the need for contingency operations and

noncombatant evacuation operations (NEO). If no maps are available for the area, the S2 at battalion level can request that the division topographic section produce some products based on Terrabase and satellite imagery. If the division topographic section cannot produce the map, the request should be forwarded through channels to corps.

I-8. COMBAT SERVICE SUPPORT

Maneuver unit commanders and their soldiers are not the only individuals that must adjust to combat under limited visibility conditions in MOUT operations. Logisticians at every level must anticipate requirements for this unique environment.

a. Units conducting resupply operations during periods of limited visibility should remember the following:

(1) Drivers and vehicle commanders should be issued night vision devices so the vehicles going to and from logistic release points do not need any illumination. This also prevents the enemy from acquiring resupply locations by following vehicles with blackout lights on.

(2) Strict noise and light discipline should be maintained.

(3) Vehicles should follow a clearly marked route to avoid any obstacles and prevent the resupply vehicle(s) from becoming disoriented.

(4) Radios should be redistributed to resupply vehicles whenever possible, in case of further instructions.

(5) Each vehicle should have a map of the area of operations (preferably a city map with the street names).

b. Combat units operating for extended periods during limited visibility should have enough batteries to keep the NVDs functioning at optimum power and sensitivity.

c. A large operational readiness float of night vision devices, especially thermal sights such as the AN/TAS-4 or AN/UAS-11, should be maintained.

d. Casualty collection during periods of limited visibility is much more difficult. Clear methods for marking any casualties must be established before the operation begins.

e. CSS operations in existing structures at night must not be visible from a long distance. This includes limiting vehicle traffic to an absolute minimum, sealing doors and windows to prevent light leakage, and dispersing assets as much as possible.

I-9. OFFENSIVE CONSIDERATIONS

US forces conduct attacks during periods of limited visibility to gain or sustain the momentum of the attack. Before conducting a limited visibility attack, the commander must balance the risks and ensure that every soldier understands the intent and control measures. Rehearsals and strict command and control reduce casualties and greatly enhance the chances for mission accomplishment.

a. Soldiers should clear buildings and rooms using the same techniques they use during periods of unlimited visibility to reduce confusion. The soldiers are well rehearsed in these techniques and, therefore, more confident. The only major difference is in equipment used. (See the paragraph on special equipment in this appendix.)

b. Movement rates are slower. Each soldier must be alert for mines, booby traps, and enemy positions. Although thermal imaging devices can

detect the difference in the temperature of the soil, light intensification devices are usually better for detecting recently disturbed dirt. Thermal imaging devices are better for identifying personnel; however, light intensifiers can identify friendly soldiers, noncombatants, and enemy troops better than the thermals.

c. Squads and fire teams should be equipped with a mixture of both thermal imaging and light intensifying devices whenever possible. This enables the squads and fire teams to obtain a better picture of the night environment and enables the soldiers to balance the strengths and weaknesses of each type of night vision device.

d. When moving through buildings, the assault teams must mark cleared rooms and buildings, and communicate with the support team(s). This communication is critical if more than one assault team is in the same building.

e. Soldiers should maximize the use of ambient light whenever possible for two reasons: to conserve the batteries of the night vision devices, and to make detection of attacking US forces harder for the enemy.

f. If flashlights or chemlights are used, they should be held away from the head or chest area. This will make it harder for enemy soldiers firing at the light to kill the soldier holding the flashlight or chemlight.

g. The assault team must have clear communications with all supporting elements, whether they are organic, in DS, under OPCON, or attached. Supporting units should not fire unless they have good communications with the assaulting elements and are sure the targets they are engaging or suppressing are the enemy.

h. Units must know where everyone is during offensive operations. Not only does this reduce the risk of fratricide, but it also increases the time of identifying, locating, and treating casualties. Also, it greatly reduces the chance of soldiers becoming disoriented and separated from the unit.

i. Assault teams should be aware of adjacent fires that diminish the effectiveness of night vision devices. Weapons flashes within small rooms cause soldiers to lose their night vision and wash out light intensification devices. Also, enemy soldiers may use flares inside and outside of buildings to render night vision devices ineffective.

j. Leaders must ensure that all soldiers follow the rules of engagement and the laws of land warfare. This is critical if the enemy is intermixed with the local civilian population. Also, soldiers and leaders must follow all control measures, especially graphic control measures.

I-10. DEFENSIVE CONSIDERATIONS

Enemy forces can be expected to use periods of limited visibility for the same reasons US forces do. (See the paragraph on advantages in this appendix.) Enemy forces may have access to sophisticated night vision devices manufactured in Europe, the United States, Japan, Korea, and the former Soviet Union. (See Chapter 4 for more information on defensive techniques.)

COUNTERING URBAN SNIPERS

Whether specially trained and equipped expert shots or merely individual riflemen of mediocre marksmanship, snipers have always played a large role in combat in built-up areas. They have been used to disrupt US operations, inflict casualties, and to tie down large numbers of troops searching for them. The lethality and accuracy of modern weapons, the three-dimensional aspect of urban battlefields, and the many alleyways, corridors, and rear exits available for a sniper's use make him a threat that cannot be ignored. Commanders and leaders at all levels must be aware of the threat posed by the urban sniper, the effects he can have on friendly unit operations, and the steps by which he can be countered and his threat minimized. For the purpose of this appendix, the term sniper is used to describe any single rifleman firing carefully aimed shots from medium to long range.

J-1. TYPES OF SNIPERS AND THEIR CAPABILITIES

The three general types of snipers are the specially trained and equipped individual, the trained marksman, and the civilian irregular. Each has different characteristics of operation and may be used to accomplish different purposes. Countermeasures that are effective against one type may be less effective against another.

a. The most dangerous sniper is the individual who has been specially selected, trained, and equipped with a modern scope-mounted sniper rifle. These individuals are expert shots and are trained to select key individuals as their targets. They can hit at great range (sometimes out to 1,000 meters) and are skilled in avoiding detection. They are normally members of an organized armed force and wear a standard uniform that may be modified to provide better camouflage. Their actions are carefully integrated into the enemy's overall plan of operation. This sniper is the most difficult to counter effectively. Until recently, there were not many potential adversaries of the US that could produce significant numbers of such individuals. However, many armies in the world have a renewed interest in snipers. More and more sniper training is taking place, and excellent 7.62-mm sniper rifles are available at a reasonable cost on the world arms market. US forces can expect to see more and more trained snipers during urban combat operations of the future. Some of these may be equipped with rifles and night observation equipment that are among the best in the world. The US Army and its Western allies already have a relatively large number of this type of sniper, as do several of the states of the former Soviet Union.

b. The trained marksman is a common sniper often found in urban combat. This sniper is a trained soldier, equipped with a standard issue weapon, who is

an above-average shot. He normally has fair to good fieldcraft skills and is difficult to detect in the urban environment. He may be employed singly or in pairs to create confusion among friendly forces, cause casualties, or harass and disrupt the tempo of operations. He is often used by the enemy in an economy-of-force role or as a rear guard or covering force while the main enemy force withdraws. He may also be placed on the perimeter of a defended urban area to provide early warning of the approach of friendly forces and to disrupt and cause them to deploy early. The trained marksman is a dangerous foe. He can be found in fairly large numbers in the armies of many potential adversaries. He is normally a member of an organized armed force and wears a standard uniform. He may, however, be a guerrilla fighter, in which case he may not wear a recognizable uniform but will normally carry his arms openly.

c. The third general type of sniper is the armed irregular. He may have little or no formal military training but may have much experience in urban combat. He may or may not wear any distinguishing uniform and may even strive to appear to be merely another of the thousands of noncombatants found in a large urban area. He may or may not carry his weapon openly and may go to great lengths to avoid identification as a sniper. His fires are normally not accurate, and he seldom deliberately targets specific individuals. His actions are not normally integrated into an overall enemy plan, although his attacks may be loosely coordinated with others in his general area. Although this type of sniper has the least ability to cause heavy losses among US forces, he has high value as an element of harassment, and in some OOTW situations he may achieve results far out of proportion to his actual ability to cause casualties.

d. The typical range for a sniper attack is 300 to 600 meters with medium-caliber rifles. Shots from 800 to 1,000 meters are the exception. However, heavy sniper rifles (.50-caliber, 12.7-mm, 14.5-mm, and 15-mm) with ranges of 1,200 to 1,500 meters are now proliferating around the world. These heavy sniper rifles were originally intended as antimateriel weapons for stand-off attack against high-value targets, such as radar control vans, missiles, parked aircraft, and bulk fuel and ammunition storage sites. Because of this, they are only marginally accurate enough for long-range shots against individual personnel. It is their ability to shoot through all but the heaviest shielding material, and their devastating effects, that make them valuable psychological weapons. The ability to shoot through common urban building materials makes these large weapons valuable as countersniper tools.

e. Several other equipment trends will result in a greater threat to US forces from urban snipers in the future.

(1) The quality and quantity of night observation devices sold on the world market is increasing daily. In the near future, even trained marksmen may be equipped with devices to allow accurate fires at night.

(2) The use of simple, direct-view optical sights on military rifles is increasing. Although not in the accuracy class of true sniper weapons, these sights make the trained marksman a much more dangerous foe. This is especially true within the shorter ranges (less than 200 meters) normally associated with combat in built-up areas.

(3) Many armies are now buying simple, but effective, devices to either completely silence or greatly suppress the muzzle blast of sniper weapons. These devices inhibit the task of determining the location of a sniper. Although many of these devices significantly reduce the maximum effective range of the weapon, they can be very effective at less than 200 meters.

J-2. LAW OF LAND WARFARE APPLIED TO SNIPERS

Historically, units that have suffered heavy and continual casualties from urban sniper fire and that have been frustrated by their inability to strike back effectively often have become enraged. Such units may overreact and violate the laws of land warfare concerning the treatment of captured belligerents. This tendency is magnified if the unit has been under the intense stress of urban combat for an extended time. It is vital that commanders and leaders at all levels understand the law of land warfare and also understand the psychological pressures that come with urban warfare. It requires strong leadership and great moral strength to prevent soldiers from releasing their anger and frustration on captured snipers or civilians suspected of sniping at them.

a. The law of land warfare is not restricted solely to declared wars. It applies in all cases of armed conflict, such as many situations in OOTW. All US soldiers are bound by these laws and the legal orders of their superiors. Under the law, it is forbidden to kill, wound, or harm an enemy who, having laid down his arms or having no means of defense, has surrendered. A sniper who has been captured, or who has surrendered, must not be harmed. It does not matter how many friendly casualties he has caused or how long he waits before he surrenders.

b. Any sniper who wears a uniform of a belligerent, carries his arms openly, and conducts himself in accordance with the law and customs of warfare is automatically entitled to be treated as a prisoner of war, not a criminal. Even an armed irregular who is part of an organized resistance movement, obeys the orders of a designated commander, carries his weapon openly, and obeys the laws and customs of war is accorded such treatment. A civilian who snipes at US forces without meeting these criteria can be detained by the military and tried by the appropriate court. Under no circumstances should a captured person be mistreated or killed in retaliation for sniping, regardless of how many casualties he may have caused.

c. In some OOTW situations, the rules of engagement and the mandate under which the US forces are operating may severely restrict how much lethal counterforce can be used against snipers. Three principles govern the legal use of lethal force. The commander must—

- (1) Make every effort to avoid causing unnecessary suffering.
- (2) Use the minimum force necessary to accomplish the task at hand.
- (3) Apply the type and degree of force in accordance with the rule of general proportionality.

d. Rules of engagement result from the law of war stretched over the situational template of a particular mission. It would violate the law of war, as

well as most ROE, to respond to sniper fire with massive, indiscriminant return fire into an urban area if another less destructive tactic or weapon could be employed without greatly increasing the risk to US forces. Whatever the situation, commanders and leaders must understand the rules of engagement and ensure their soldiers follow them.

J-3. SNIPER AWARENESS

The first step toward countering the successful use of snipers against US forces is for commanders, leaders, and staff officers at all levels to be aware of the sniper threat. Although snipers may be more prevalent in some situations than in others, depending on the adversary, a sniper threat always exists in urban areas to some degree. Plans to counter the sniper threat and to protect the friendly force from snipers must be integrated into the operation from the beginning. Tactics and techniques must be taught to soldiers before they are actually faced with sniper fire.

a. A careful METT-T analysis and consultation with personnel familiar with the area may reveal the existence and degree of the sniper threat to US forces. This is especially important during OOTW. Information on the local sniper threat may be obtained from the following sources:

- Host nation military, government, or police officials.
- US Embassy personnel.
- Allied special operations forces (SOF) or other allied forces operating in the area.
- US special operations forces or other US forces in the area.
- UN officials or other UN forces in the area.
- Nongovernment agency officials.
- Local militia members.
- Local civilians, including children.

b. Coordination with expert US snipers can identify specific areas and situations where enemy snipers may be effective and will help the commander decide on the countermeasures to be employed. In addition to the school-trained snipers assigned to the infantry battalion, there are several other sources of sniper expertise, some of which may be available only during domestic OOTW situations. Some examples of expert US snipers are:

- US SOF snipers such as special forces (SF), rangers, or sea-air-land teams (SEALs).
- US law enforcement officials such as police Special Weapons and Tactics (SWAT) teams, the Drug Enforcement Agency (DEA), the Federal Bureau of Investigation (FBI), or the Secret Service.

J-4. PLANNING SNIPER COUNTERMEASURES

When planning sniper countermeasures, the commander and staff must answer three basic questions. The answers to these questions suggest the set of countersniper tactics, techniques, and procedures that will best fit the METT-T

condition under which the unit is operating. Consideration of these questions assists the commander and staff in eliminating the TTP that are inappropriate to the situation.

a. The first question is, "What does the US commander want to accomplish, and what rules of engagement govern his operations?" If the commander's intent is to conduct combat operations, and if the rules of engagement allow him to do this with the full force of his available firepower, he can either suppress and bypass the sniper or use the fundamental principle of fix and maneuver. He can use firepower to suppress and fix the sniper in position while maneuvering forces either to avoid the sniper and continue the mission or to close with and eliminate him. However, if the rules of engagement limit the application of force, or the use of such force would create a large number of civilian casualties, he may be limited in his initial response to a sniper attack. In many OOTW situations, the key to success is perseverance, restraint, and the use of minimum or appropriate force. The unlimited use of firepower in an urban area may undermine the legitimacy of the US force and work against the commander's ultimate intent. The right to self-defense is never denied US forces, but it may be limited. This is a difficult concept for soldiers to grasp, especially if they are taking fire from snipers. The time to explain it to a unit is *before* enemy contact, not during. Leaders must keep the commander's ultimate intent in mind when they plan and execute sniper countermeasures.

b. The second question is, "What does the enemy want to accomplish with his snipers, and what capabilities does he have to accomplish it? There are several goals enemy snipers may be striving for. Among them are—

(1) Defeating US forces. At the small-unit tactical level, this is possible for the specially trained sniper and possibly for the marksman.

(2) Forcing US forces to deploy, delaying them, breaking up their tactical tempo, and allowing the enemy to seize the initiative. Unless US forces react aggressively and counter the sniper's effects quickly, this goal is possible for all snipers.

(3) Harassing US forces, exhausting them, and lowering morale. All snipers can do this, but most often the marksman and the irregular are used for this purpose.

(4) Killing a specific individual. This task is almost always assigned to a specially trained sniper. His target may be specific individuals by their function such as military officers, RATELOs, or armored vehicle commanders. In an OOTW situation, his target may be specific individuals, such as political or community leaders, or it may be classes of individuals such as members of the media, international aide workers, policemen, or civilians living in a contested area.

(5) Causing US casualties for political effect. As the information age progresses, potential adversaries will become more and more adept at manipulating the attitudes of the American public to turn them against US efforts in an OOTW situation. This has already occurred and will again. One of the proven ways to do this has been to cause US military casualties,

regardless of their tactical effect, knowing that the world media will transmit images that will discourage Americans and lessen their support.

To answer the second part of this question, the commander must determine the level of sniper to be countered. He must also determine the type of weapons, ammunition, tactics, and night vision equipment available to the enemy. This information can be used to assess the expected range and lethality of enemy snipers, and will aid in identifying patterns to counter. It will also be useful to assess passive protective measures such as the likely effectiveness of body armor, light vehicle armor kits, screens, shields, and so forth.

c. The third important question is, "What are the rules of engagement?" There are three basic levels of ROE against snipers, with many variations of each.

(1) US troops can be held to the use of minimum force. This is common in an OOTW situation, especially during—

- Aid to domestic authorities.
- Peacekeeping.
- Noncombatant evacuations.
- Humanitarian relief.

(2) US troops can be allowed equal or reasonable response to force used against them. This may be the situation in the more violent peace enforcement operations.

(3) US troops can be allowed to use overwhelming force. This is the normal situation during combat in built-up areas when the enemy poses a significant threat to US forces.

J-5. COUNTERSNIPER TACTICS, TECHNIQUES, AND PROCEDURES

Countersniper TTP by US forces involve two types of actions: active countermeasures and passive countermeasures. Each has its place, depending on the METT-T conditions under which the unit is operating. Most sniper countermeasures are not new TTP for well-trained combat troops. They are simply common sense actions taken routinely while in a combat area to limit exposure to fire, conceal positions, move tactically, and respond to enemy contact. Some countermeasures are not routine, however, and require additional training emphasis. No matter which TTP are employed, successful countersniper measures present leaders at all levels with a challenge to maintain unit discipline. The sniper has the initiative. Units must not implement countermeasures halfheartedly. To do so invites casualties from snipers who can wait hours for the moment a unit's guard is down.

a. Active countermeasures either detect and destroy the sniper before he can fire, or engage and neutralize him after he fires. Active countermeasures include the use of the following:

(1) *Observation posts and aerial observers.* Observers can maintain a constant surveillance over potential sniper positions and detect snipers as they

attempt to move into a position for a shot. Once detected, snipers are vulnerable to all sorts of fires and can be easily neutralized or forced to withdraw. Observation posts should have access to powerful spotting telescopes, medium-power binoculars, and night observation devices, thermal if possible. Constantly scanning an area for the minute movements made by a well-trained sniper is exhausting. Therefore, personnel on OP duty should rotate often. However, a person who is intimately familiar with the area being scanned is most likely to notice a subtle change. Aerial observers can operate from any of several platforms. The modernized OH-58, with its sophisticated night vision capability, and the AC 130 have excellent capability to detect individual snipers around US positions. Any of several unmanned aerial vehicles (UAVs), with their extended loiter time and video/night vision capability, can also be used effectively. As military and commercial lasers become more and more common, these devices may be used against US forces manning observation posts. Observers should be equipped with laser protective glasses, especially when using direct-view optical devices. Laser protective glasses, binoculars with laser filters, and indirect-view optics protect observers from most laser systems available now around the world.

(2) **Patrols.** Constant reconnaissance and security patrols around a unit's position hinder a sniper's getting into a firing position undetected. Small patrols are the most effective.

(a) Like US sniper teams, enemy sniper teams are small and depend on stealth to approach a target along covered and concealed routes. Normally, they move to a hide or "shoot" position and remain there for long periods. These sniper teams are most effective when they have good fields of fire from 300 to 600 meters. At ranges of less than 300 meters, the sniper's movements and firing signature are easily detected. A moving sniper who has been discovered by a small security patrol is at a great disadvantage. He lacks the firepower to fight a long engagement, and he is normally far from any support or assistance.

(b) Small security patrols at night using night vision devices can be very effective. Reconnaissance patrols should move by covered and concealed routes to good observation points, stop, observe, then move to another position. The patrol routes must vary, and a reaction force or supporting weapons must be ready if the patrol makes contact. If military working dogs and trained handlers are available, they can be useful in detecting enemy snipers. Dogs can quickly search large buildings for hidden enemy and can detect personnel at long range if downwind.

(c) In addition to reconnaissance patrols, small combat patrols are also effective. A variation of the ambush patrol is the stay-behind ambush. A small ambush element moves as part of a larger patrol and occupies its position without being observed. It then observes its kill zone, which may be very large if the element has a sniper team with it, and engages enemy snipers as they attempt to move into position.

(3) **US snipers.** US snipers can be most effective as a counter to enemy snipers. Not only do they have an expert knowledge of sniping and likely enemy hiding places, they can normally engage enemy marksmen and

irregulars at a greater range than the enemy sniper can engage US forces. Their precision fires are also much less likely to cause civilian casualties than fires from other weapons. The commander must carefully consider whether the use of these scarce resources in such a purely defensive, reactive role is the best way to employ them. Often, especially in OOTW, it may be. In other cases, they may be more valuable inflicting casualties on enemy forces. In some OOTW situations, SOF sniper teams may be available. These highly trained teams are often equipped with special, long-range sniper weapons that can be used to dominate large areas around US forces.

(4) *Unit weapons.* If a unit is engaged by an enemy sniper, it may be authorized to respond with fire from all its light weapons. In an urban area, the direction of enemy fire, especially of a single rifle shot, is often difficult to determine. If a unit can determine the general location of a sniper, it should return suppressive fire while maneuvering a subunit to engage the sniper from close range. This is not always successful, because a well-trained sniper often has a route of withdrawal already chosen. Massive return of fire and immediate maneuver can be an effective response to short-range sniper fires if the rules of engagement allow it. In mid- to high-intensity urban combat, they are often the best immediate responses. Exploding fragmentation rounds, such as from the M203 grenade launcher, are the most effective suppressors.

(5) *Overmatching fire from selected weapons.* The use of overmatching return fires against snipers can be very effective in high-intensity urban combat. Even in some OOTW situations this can work. The 25-mm cannon on the BFV is a powerful and accurate weapon that can penetrate deep into buildings with its APDS rounds. Fires from .50-caliber machine guns were effective against snipers during combat in Panama in 1989. Units reported that the snipers seemed to be intimidated into inaction by the immediate return of heavy machine gun fire. In Somalia, immediate heavy fires from MK 19 automatic grenade launchers were often effective at stopping sniper fires from armed irregulars. Light or medium antitank weapons are also effective. Because of their accuracy, guided munitions such as the TOW, Hellfire, Dragon, or Javelin have the added advantage of limiting collateral damage somewhat. Tank cannon can also be used to respond to sniper fire, although the danger of collateral damage is greater because of the extreme penetration of the round. Immediate mortar or artillery fires can be effective in suppressing a sniper and forcing him to move, but they will seldom be effective by themselves.

(6) *Lasers.* The use of lasers to detect and counter enemy snipers is a new application for this technology. The Stingray system mounted on the BFV is effective against snipers who employ telescopes or night vision devices to observe US forces. In the semiautomatic mode, the Stingray can be used to detect possible snipers and alert the gunner to take action. In the automatic mode, it can be set to scan a specific sector and then engage and neutralize all telescopes and night vision devices it detects. The laser countermeasure system (LCMS) is a simpler, handheld version of the Stingray. It is aimed by the gunner and can also detect and neutralize a sniper's optics. To a lesser degree than these two systems, which are designed to engage targets, powerful

laser range finders and target designators can be used to suppress and temporarily disable enemy snipers. Laser range finders and target designators are effective against all who look in their general direction, regardless of whether a telescope is being employed. An enemy sniper looking through a telescope or binoculars, or one scanning a US position at night, is more vulnerable to laser injury. Although laser devices do not damage buildings or penetrate rooms, care must be taken at close ranges to avoid unnecessary civilian casualties from their use in built-up areas.

(7) *Preemptive fires.* In mid- to high-intensity urban combat, preemptive fires can often be used against likely sniper positions. This technique is more often used during offensive operations. It uses large amounts of ammunition but can be very effective for short attacks. Fragmentation fires from artillery, mortars, and grenade launchers are best for suppressing snipers whose position has not yet been detected.

(8) *Projected smoke or riot control agents.* Projected smoke that builds quickly is a good response to protect a unit from further casualties if engaged by an enemy sniper. It greatly limits his ability to acquire targets. The closer the smoke is placed to the sniper's location, the more effective it is. If the location of the sniper is unknown or cannot be reached by projected smoke, a smoke cloud established near the unit is still effective in reducing the sniper's chances of hitting another target. If the rules of engagement permit, and permission has been granted for the use of riot control agents, they can be used effectively to reduce the sniper threat. Projected agents are the only really useful ones due to the tendency of winds in urban areas to swirl and change direction often. Few snipers can deliver long-range, accurate fires while wearing protective masks.

(9) *Helicopter-carried countersniper teams.* Not only can helicopters provide aerial observation and fires or insert additional combat patrols and reaction forces, they can also carry countersniper teams that can engage identified enemy snipers from the air. US snipers can effectively fire from helicopters using low-power optical sights or infrared laser aiming devices and night vision goggles. When a target is detected, the helicopter begins a pylon turn, orbiting the target. The US sniper, firing out of the left side of the aircraft, can easily acquire and hit his target, while the flight path offers the enemy a more difficult deflection shot. Care must be taken, however, to guard against enemy using decoy snipers to lure helicopters into aerial ambushes.

b. Passive countermeasures prevent the sniper from detecting a clear target or prevent his fires from causing casualties. Many of the passive countermeasures are not unique to countering enemy snipers. They are common sense actions taken by all well-trained infantry units in a combat area to limit exposure and minimize casualties. However, passive countersniper measures are rarely successful by themselves. They may be politically and psychologically effective in terms of reducing US casualties and the level of violence, but they are often ultimately counterproductive to the commander's main mission. They tend to isolate US forces, especially during OOTW, when a visible presence is often required. They tend to create a siege mentality, and they pass the initiative over to the sniper. Especially during OOTW, along

with the initiative comes the certainty of at least an occasional success in casting doubt on the legitimacy and competency of the US effort. Among the most common passive countermeasures are the following:

(1) ***Limit exposure.*** Use covered and concealed routes. Avoid open plazas and intersections. Stay away from doorways and windows. Move along the side of the street, not down the center. Move in the shadows. Move dispersed, using traveling or bounding overwatch. Avoid lighted areas at night. Avoid being silhouetted against lights or the skyline. Move quickly across open areas that cannot be avoided. Remain crouched or prone behind cover or concealment whenever possible. If troops are riding in the cargo area of trucks, keep the canvas cargo cover mounted to screen them. (This countermeasure may not be appropriate if there is threat of ambush by enemy forces in addition to snipers.) Avoid gathering together in large groups in the open. Remain dispersed. Avoid wearing obvious badges of rank. Avoid exaggerated saluting or standing at attention for officers while in the open.

(2) ***Wear protective equipment.*** The kevlar helmet and the protective vest will not always stop a sniper bullet, but in many cases they will significantly reduce the severity of wounds. Wear them at any time soldiers are exposed to potential sniper fire. In situations where dismounted movement across country is not required, request and issue soldiers special, heavy protective vests that are actually bullet-proof. All members of units assigned to static positions, such as roadblocks and observation posts, should wear this additional protection.

(3) ***Use armored vehicles.*** Whenever possible, move around the urban area in a protected vehicle with as little exposure as possible. Avoid open-sided cargo vehicles. Requisition or improvise vehicular armor against small-arms fire for all administrative and logistical vehicles.

(4) ***Erect screens and shields.*** Use simple canvas or plastic screens to make a dangerous alleyway or street crossing much safer for foot traffic. Adapt screens on windows to allow vision out while hiding personnel inside. Use moveable concrete barriers to provide protection for personnel at static positions. Use common items, such as rubble-filled 55-gallon drums and sandbags, to provide cover where none exists naturally.

(5) ***Deny the enemy use of overwatching terrain.*** Either occupy such terrain with friendly forces or modify it to make it less useful to an enemy sniper. Pull down likely hiding places (ensure all actions are in accordance with the laws and customs of war). Clear bushes and rubble. Board or brick up windows. Pile up earth and rubble in front of buildings to block lines of sight for snipers.

(6) ***Use smoke hazes or smoke screens to obscure the sniper's field of view and limit the effectiveness of his fires.*** A clear atmosphere is required for accurate long-range sniping. Smoke hazes can be maintained over broad areas for long periods without significantly hindering friendly operations. Smoke screens can be created quickly and sustained for short periods, often long enough for US forces to accomplish a short-term objective free of sniper fires.

CLOSE QUARTERS COMBAT TECHNIQUES

A large portion of combat in built-up areas takes place at very close quarters, often between small groups of combatants within the confines of a single room. Because of this, individual combat actions can flare up quickly and be over in a matter of seconds. Success or failure is often determined by life or death decisions made and actions taken almost instinctively by individual soldiers and small teams as they encounter differing complex situations in each new room. One of the complexities often encountered, particularly during OOTW, is the intermixing of combatants with noncombatants in the same building, often in the same rooms. Employing close quarters combat techniques is often the most effective means of achieving victory while minimizing friendly losses, avoiding unnecessary noncombatant casualties, and conserving ammunition and demolitions for subsequent operations.

K-1. BATTLE DRILLS AND CLOSE QUARTERS COMBAT

Close quarters combat techniques do not replace battle drills. They are techniques to be used when the tactical situation calls for room-by-room clearing of a relatively intact building in which enemy combatants and noncombatants may be intermixed. These techniques involve increased risk in order to clear a building methodically, rather than using overwhelming firepower to neutralize all its inhabitants. Certain close quarters combat techniques, such as methods of movement, firing stances, weapon positioning, and reflexive shooting, are useful for all combat in confined areas. Other techniques, such as entering a room without first neutralizing known enemy occupants, are appropriate in only some tactical situations. Generally, if a room or building is occupied by an alerted enemy force that is determined to resist, and if most or all noncombatants are clear, overwhelming firepower should be employed to avoid friendly casualties. In such a situation, supporting fires, demolitions, and fragmentation grenades should be used to neutralize a space before friendly troops enter. In some combat situations, however, the use of heavy supporting fires and demolitions would cause unacceptable collateral damage. In other situations, often during OOTW, enemy combatants are so intermixed with noncombatants that US forces cannot in good conscience use all their available supporting fires, and room-by-room clearing may be necessary. At such times, close quarters combat techniques are most appropriate.

K-2. PRINCIPLES OF CLOSE QUARTERS COMBAT

As in all other military operations, battles that occur at close quarters, such as within a room or hallway, must be planned and executed with care. Units must

train, practice, and rehearse close quarters combat techniques until each fire team and squad operates smoothly as a team. Each member of the unit must understand the principles of close quarters combat and the part his actions play in their successful execution. The principles of close quarters combat are *surprise, speed, and controlled violent action*.

a. *Surprise* is the key to a successful assault at close quarters. The fire team or squad clearing the room must achieve surprise, if only for seconds, by deceiving, distracting, or startling the enemy. Sometimes stun or flash grenades may be used to achieve surprise. These are more effective against a nonalert, poorly trained enemy than against alert, well-trained soldiers.

b. *Speed* provides a measure of security to the clearing unit. Speed lets soldiers use the first few vital seconds provided by surprise to their maximum advantage. In close quarters combat, speed does not mean incautious haste. It can best be described as "careful hurry."

c. *Controlled violent action* eliminates or neutralizes the enemy while giving him the least chance of inflicting friendly casualties. Controlled violent action is not limited to the application of firepower only. It also involves a soldier mind-set of complete domination.

Each of the principles of close quarters combat has a synergistic relationship to the others. Controlled violence coupled with speed increases surprise. Hence, successful surprise allows increased speed.

K-3. FUNDAMENTALS OF CLOSE QUARTERS COMBAT

The ten fundamentals of close quarters combat address actions soldiers take while moving along confined corridors to the room to be cleared, while preparing to enter the room, during room entry and target engagement, and after contact. Team members must—

a. Move tactically and silently while securing the corridors to the room to be cleared. Carry only the minimum amount of equipment. Rucksacks and loose items carried by soldiers tire them and slow their pace, and cause noise.

b. Arrive undetected at the entry to the room in the correct order of entrance, prepared to enter on a single command.

c. Enter quickly and dominate the room. Move immediately to positions that allow complete control of the room and provide unobstructed fields of fire.

d. Eliminate all enemy within the room by the use of fast, accurate, and discriminating fires.

e. Gain and maintain immediate control of the situation and all personnel in the room.

f. Confirm whether enemy casualties are wounded or dead. Disarm and segregate the wounded. Search all enemy casualties.

g. Immediately perform a cursory search of the room. Determine if a detailed search is required.

h. Evacuate all wounded and any friendly dead.

- i. Mark the room as cleared, using a simple, clearly identifiable marking in accordance with the unit SOP.
- j. Maintain security at all times and be prepared to react to more enemy contact at any moment. Do not neglect rear security.

K-4. INITIAL ACTIONS TO CLEAR A BUILDING

The initial actions to clear a building are no different during close quarters combat than during any other MOUT.

- a. The unit isolates the building using direct or indirect fires before the lead element moves to the breach point. The unit—

- (1) Covers mounted avenues of approach with antiarmor weapons.

- (2) Covers dismounted avenues of approach with automatic weapons.

- b. The unit suppresses enemy fires and neutralizes suspected and likely enemy positions as the breach and clearing teams move into position. The unit obscures the movement of the breach and clearing teams to the building by using smoke.

- c. Breach and clearing teams secure a foothold in the building. Teams move along covered and concealed routes and enter at the highest possible level of the building. The unit shifts fires to other floors or buildings as the clearing teams enter. If possible, clearing teams clear hallways and rooms from the top of the building down.

K-5. COMPOSITION OF THE CLEARING TEAM

Close quarters combat clearing techniques are designed to be executed by the standard four-man fire team. Because of the confined spaces typical of building- and room-clearing operations, units larger than squads quickly become unwieldy. When shortages of personnel demand it, room-clearing operations can be conducted by two- and three-man teams, but four-man teams are optimum. Using fewer personnel greatly increases the combat strain and the risks to the participants.

K-6. BREACHING

An integral part of close quarters combat is the ability to gain access quickly to the room to be cleared. Breaching techniques vary widely based on the type of construction encountered and the types of munitions available to the breaching force. Techniques range from simple mechanical breaching to complex, specialized demolitions.

- a. A simple method of breaching is the *shotgun ballistic breach* for forced entry of standard doors. A 12-gauge shotgun loaded with buckshot or slugs can be used to breach most standard doors quickly. When done properly, the shotgun breach requires only a few seconds. The two standard shotgun breaching techniques are the *doorknob breach* and the *hinge breach*. When attempting either technique, the gunner approaches the door from an angle, avoiding standing in the area directly in front of the door. While holding the

stock of the shotgun in the pocket of his shoulder, the gunner places the muzzle tightly against the door, aiming down at a 45-degree angle.

(1) For the doorknob breach, the aim point is a spot halfway between the doorknob and the frame, not at the doorknob itself. The gunner fires two quick shots in the same location, ensuring that the second shot is aimed as carefully as the first. Weak locks may fly apart with the first shot, but the gunner should always fire twice. Some locks that appear to be blown apart have parts still connected that will delay entry. If the lock is not defeated by the second shot, the gunner repeats the procedure.

(2) The hinge breach technique is performed much the same as the doorknob breach, except the gunner aims at the hinges. He fires three shots per hinge—the first at the middle, then at the top and bottom (Figure K-1). He fires all shots from less than an inch away from the hinge. Because the hinges are often hidden from view, the hinge breach is more difficult.

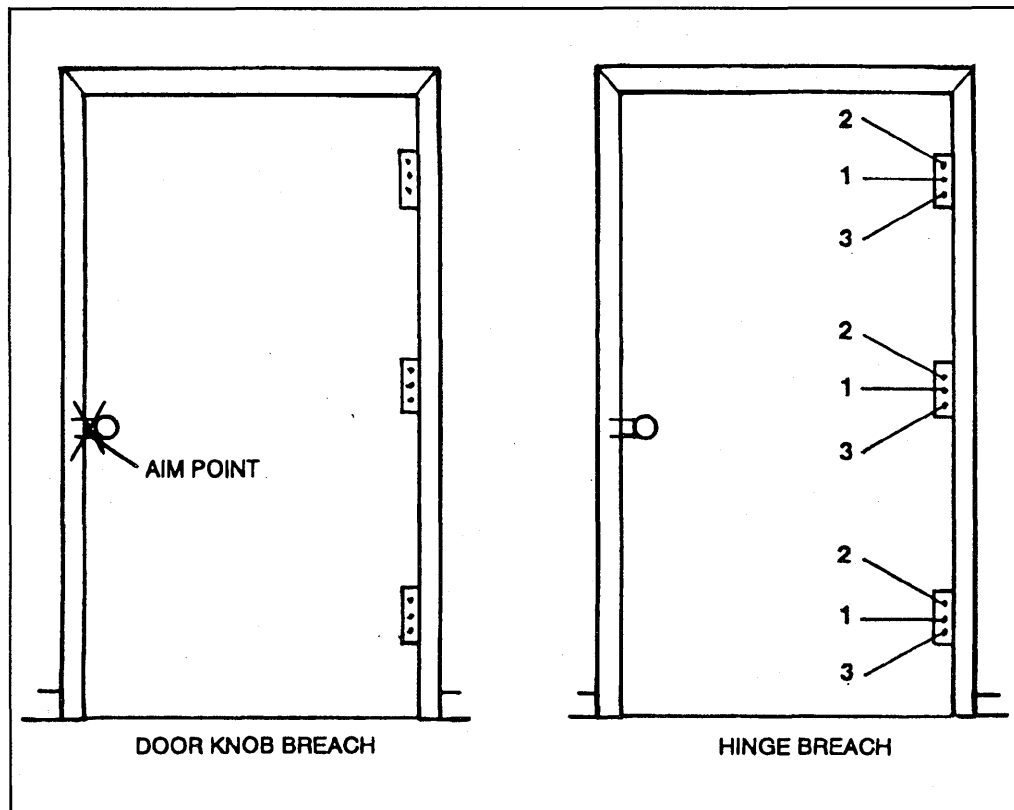


Figure K-1. Aim points for shotgun breach of a standard door.

Regardless of which technique the gunner uses, immediately after he fires, he kicks the door in or pulls it out. He then pulls the shotgun barrel sharply upward and quickly turns away from the doorway to signal that the breach point has been cleared. This rapid clearing of the doorway allows the following man in the fire team a clear shot at any enemy who may be blocking the immediate breach site.

b. Demolitions are often needed to defeat more elaborate barriers or to produce a desired effect to aid the initial entry. See Appendix L for a discussion of expedient demolitions for breaching common urban barriers.

c. Mechanical breaching is not addressed here, but it is an assumed capability within all units. Whether or not to take the time to defeat weak barriers, such as doors or windows, by means of crowbars, saws, sledgehammers, or axes is a decision that must be made based on the conditions of METT-T. Mechanical breaching should always be planned as a backup to a ballistic or explosive breach.

K-7. BREACH POINT

Clearing team members must approach the breach point quickly, quietly, and in standard order. This approach preserves the element of surprise and allows for quick entry and domination of the room.

a. The order of movement to the breach point is determined by the method of breach and the intended actions at the breach point. The members of the fire team are assigned numbers 1 through 4, with the team leader always designated number 3. If one member of the clearing team is armed with the SAW rather than an M16 rifle or carbine, he should be designated number 4.

(1) The order of movement for a shotgun breach has the shotgunner up front, followed by the number 1 man, number 2 man, and then the number 3 man (team leader). After the door is breached, the shotgunner falls to the rear of the lineup and acts as the number 4 man.

(2) The order of movement for a demolition breach is number 3 (team leader), number 2, number 1, and then number 4. The team leader provides security at the doorway. The number 2 man carries the demolition charge and places it. Number 1 carries a fabricated blast shield. Number 4 provides rear security. After the demolition charge is placed, number 2 falls in behind number 1 (with the blast shield), and number 3 (team leader) falls in behind number 2, re-forming the standard 1, 2, 3, 4 configuration.

(3) If neither a shotgun nor a demolitions breach is required, the order of movement is the standard 1, 2, 3, 4 configuration.

b. The clearing team must always be alert. Team members provide security at the breach point and to the rear, laterally down corridors, and upward if near stairs or landings. The two basic techniques for moving down hallways are shown in Figure K-2. Hallway intersections are dangerous areas and should be approached cautiously as shown in Figures K-3 and K-4.

(1) The *serpentine technique* is used in narrow hallways. The number 1 man provides security to the front. His sector of fire includes any enemy soldiers who appear at the far end of the hall or from any doorways near the end. The number 2 and number 3 men cover the left and right sides of the number 1 man. Their sectors of fire include any soldiers who appear suddenly from nearby doorways on either side of the hall. They cover the number 1 man's flanks. The number 4 man, normally carrying the SAW, provides rear protection against any enemy soldiers suddenly appearing behind the clearing team.

(2) The *rolling-T technique* is used in wide hallways. The number 1 and number 2 men move abreast, covering the opposite side of the hallway from the one they are walking on. The number 3 man covers the far end of the hallway from a position behind the number 1 and number 2 men, firing between them. Once again, the number 4 man provides rear security.

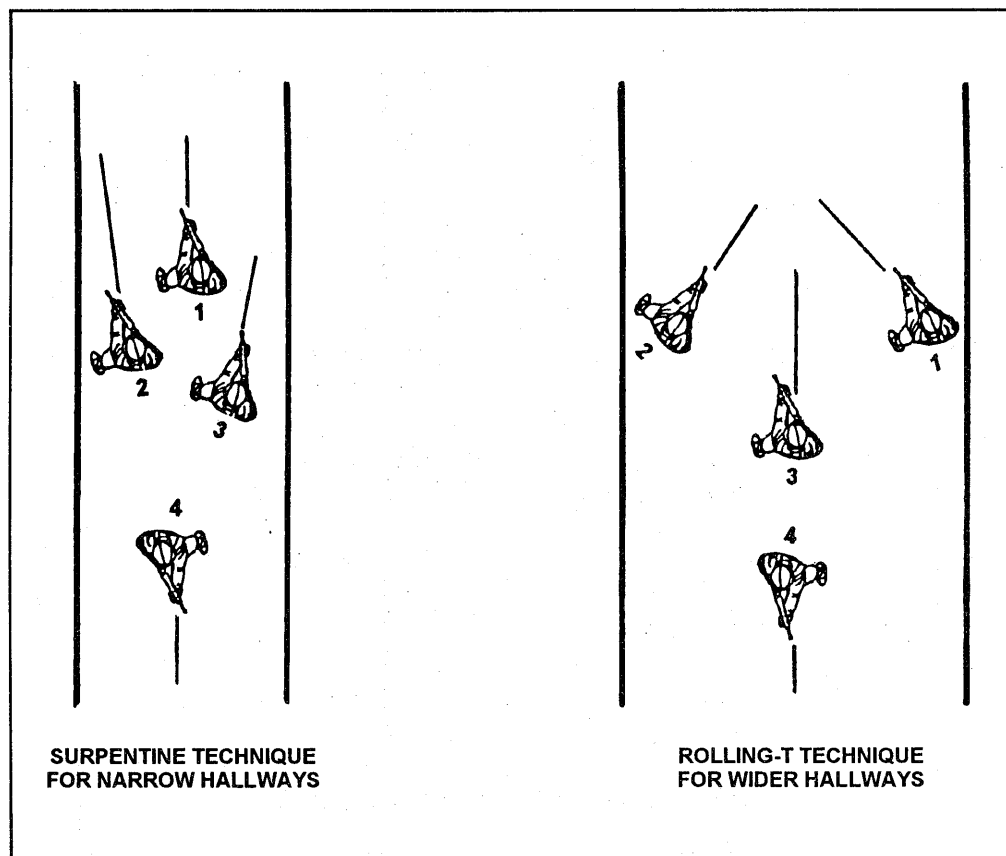


Figure K-2. Hallway clearing techniques.

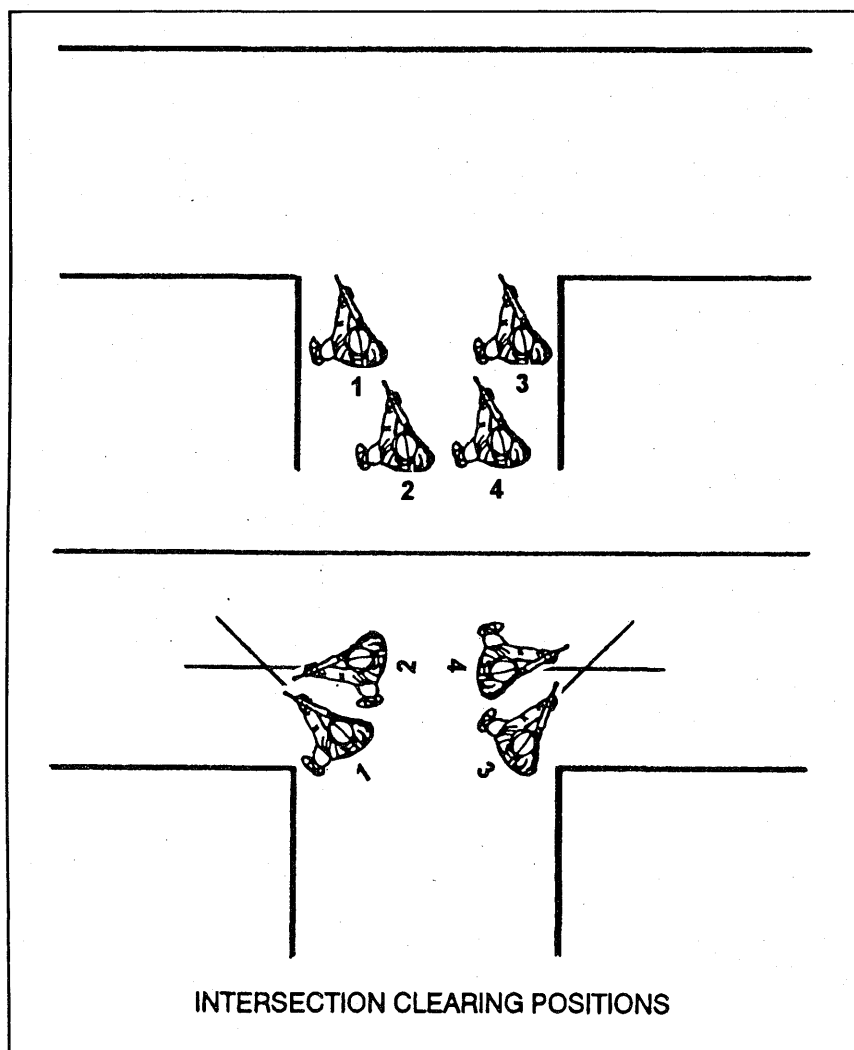


Figure K-3. T-shaped hallway intersection clearing positions.

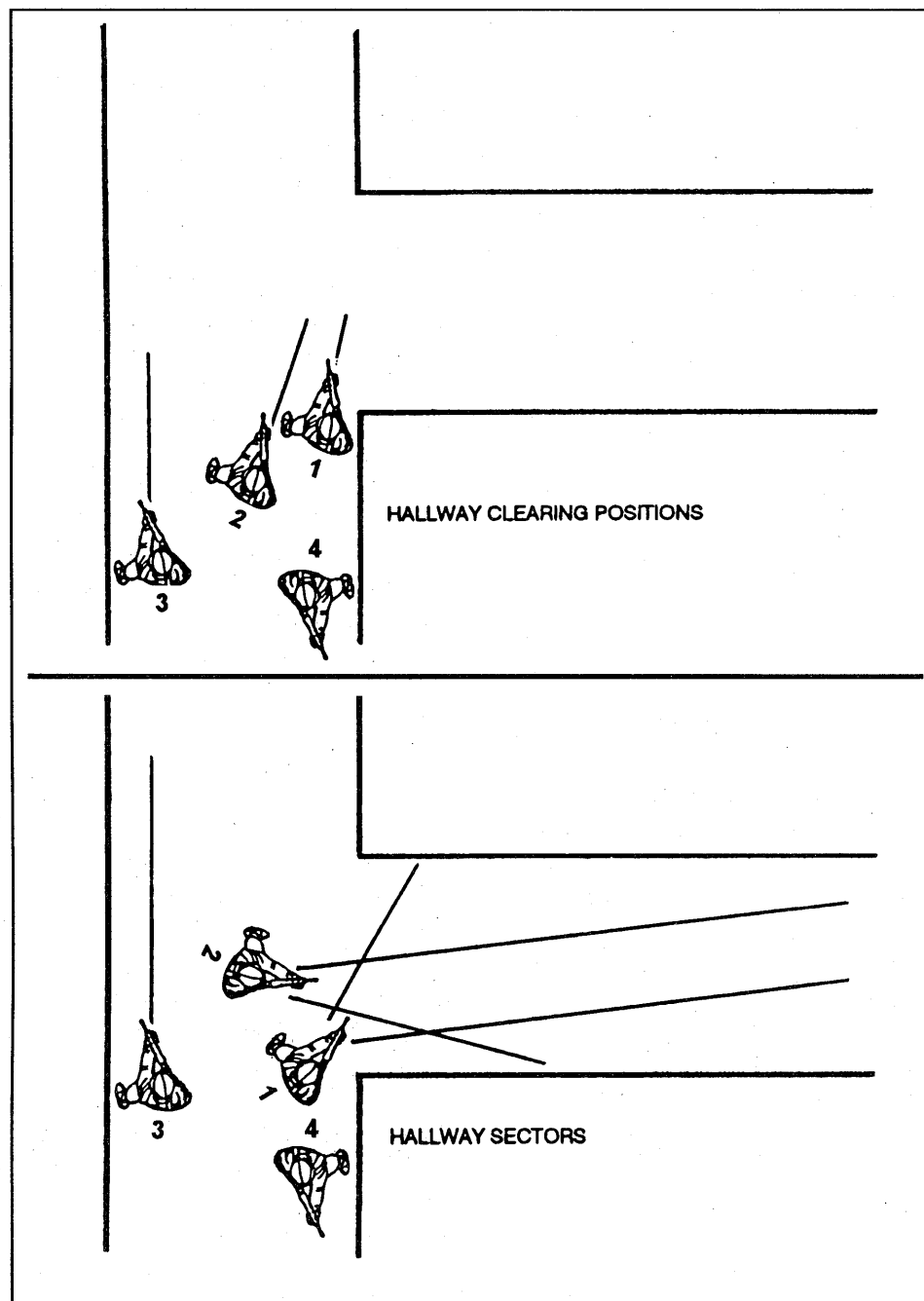


Figure K-4. Hallway intersection clearing positions and sectors of fire.

K-8. INDIVIDUAL MOVEMENT AND WEAPONS CONTROL

As in all combat situations, the clearing team must move tactically and safely. Individuals who are part of a clearing team must move in a standard manner, using practiced techniques known to all.

a. When moving, team members hold their weapons with the muzzle pointed in the direction of travel. They keep the butt of the rifle in the pocket of their shoulder, with the muzzle slightly down to allow for unobstructed vision. Soldiers keep both eyes open and swing the muzzle with their head so that the rifle is always aimed where the soldier is looking.

b. Team members avoid "flagging," or leading, with the weapon when working around windows, doors, corners, or areas where obstacles must be negotiated. Flagging the weapon gives advance warning to anyone looking in the soldier's direction, making it easier for an enemy to grab the weapon. Soldiers must keep their weapons under control at all times.

c. Team members should keep weapons safe (selector switch on SAFE and index finger outside of trigger guard) until a hostile target is identified and engaged. After a team member clears his sector of all targets, he returns his weapon to the SAFE position.

d. If a soldier has a malfunction with his weapon during close quarters combat, he should immediately drop to one knee and conduct immediate action to reduce the malfunction. Once the weapon is operational, there is no need to return to the standing position to engage targets unless the soldier must move to another firing position. Valuable time is saved by resuming target engagement from the kneeling position. When other members of the team see a soldier drop to one knee, they know immediately that he has a malfunction and that they should engage targets in his sector.

K-9. ACTIONS OUTSIDE THE POINT OF ENTRY

Actions outside the point of entry must be quick and well rehearsed. The doorway or breach point is a dangerous position. The clearing team is focused on entry and could be surprised by an enemy appearing unexpectedly in the corridor.

a. Clearing team members' positions relative to the door are important as are their weapons' carry positions. Team members stand as close to the entry point as possible, staying in a crouched position. They hold their weapons either in the high-carry or the low-carry position. They ensure the muzzle is not pointed at another team member.

b. All team members must signal one another that they are prepared before the team enters the room. The last man taps or squeezes the arm of the man in front of him, and each one passes this signal along. Team members avoid the use of a verbal signal, which may alert the enemy and destroy the element of surprise.

c. All individual equipment that is carried must be selected carefully and prepared properly to ensure that it is quiet and not cumbersome. Essential items only should be carried during close quarters combat. Protective vests and helmets should be worn by all team members. Additional protective equipment, such as gloves, kneepads, or goggles, may be worn, depending on the situation and the unit's level of training.

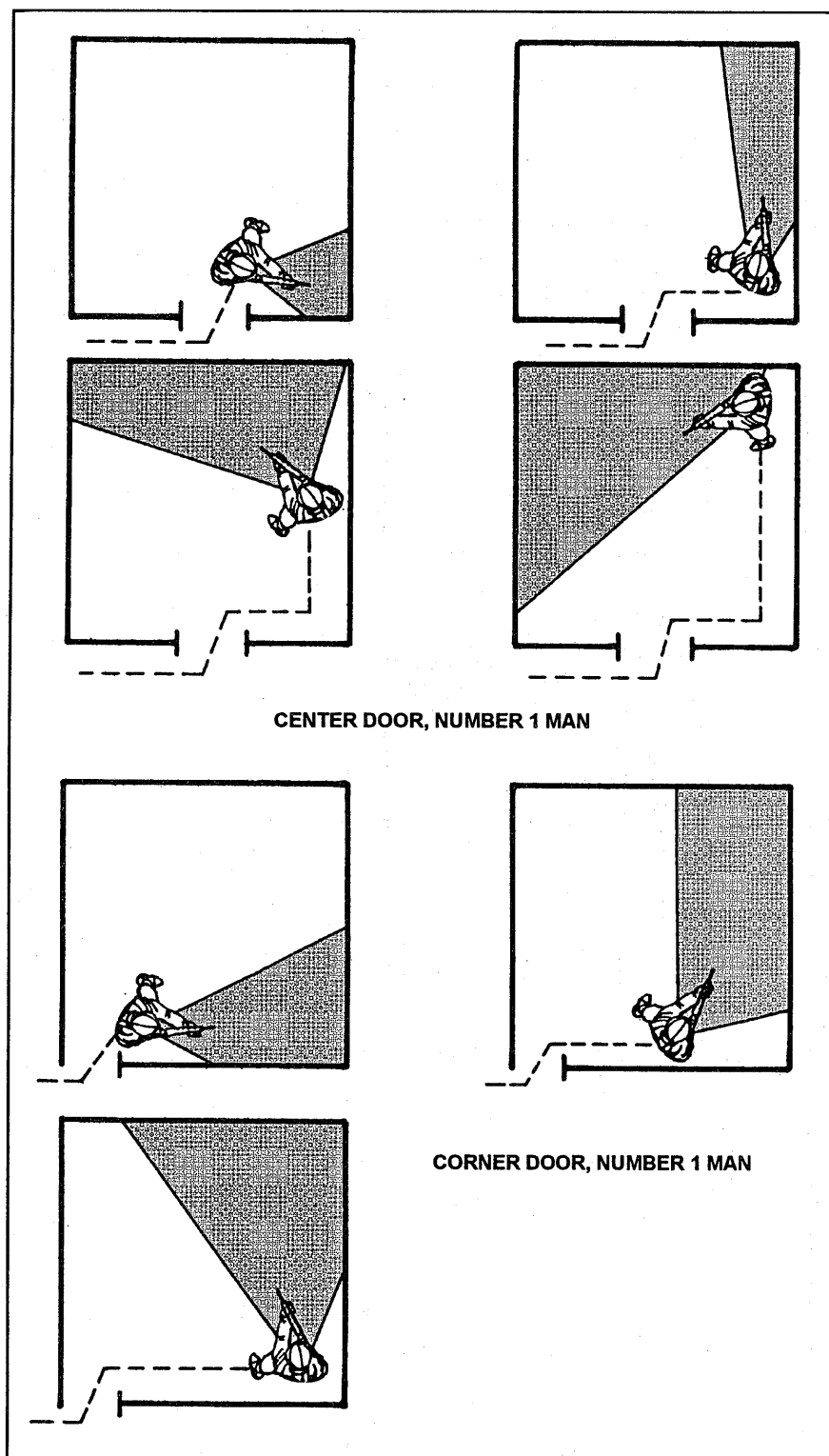


Figure K-5. Path of #1 man center door and corner door.

K-10. ACTIONS UPON ENTRY

The entire team should enter the room as quickly and as smoothly as possible and clear the doorway immediately.

a. The door is the focal point of anyone in the room. It is known as the "fatal funnel," because it focuses attention at the precise point where the individual team members are the most vulnerable. Moving into the room quickly reduces the chance that anyone will be hit by enemy fire directed at the doorway. The sequence of movements described below is shown in Figures K-5 through K-14.

b. On the signal to go, the clearing team moves through the door quickly and takes up positions inside the room that allow it to completely dominate the room and eliminate the threat. Team members stop movement only after they have cleared the door and reached their designated point of domination.

(1) The first man to enter moves in as straight a line as possible toward the corner for which he is responsible. He may then turn and move deep into the far corner of the room. The depth of his movement is determined by the size of the room, any obstacles in the room such as furniture, and by the number and location of enemy and noncombatants in the room (Figure K-5).

(2) The second man enters and moves toward the corner

in the opposite direction, following the wall, but not directly against it (Figure K-6).

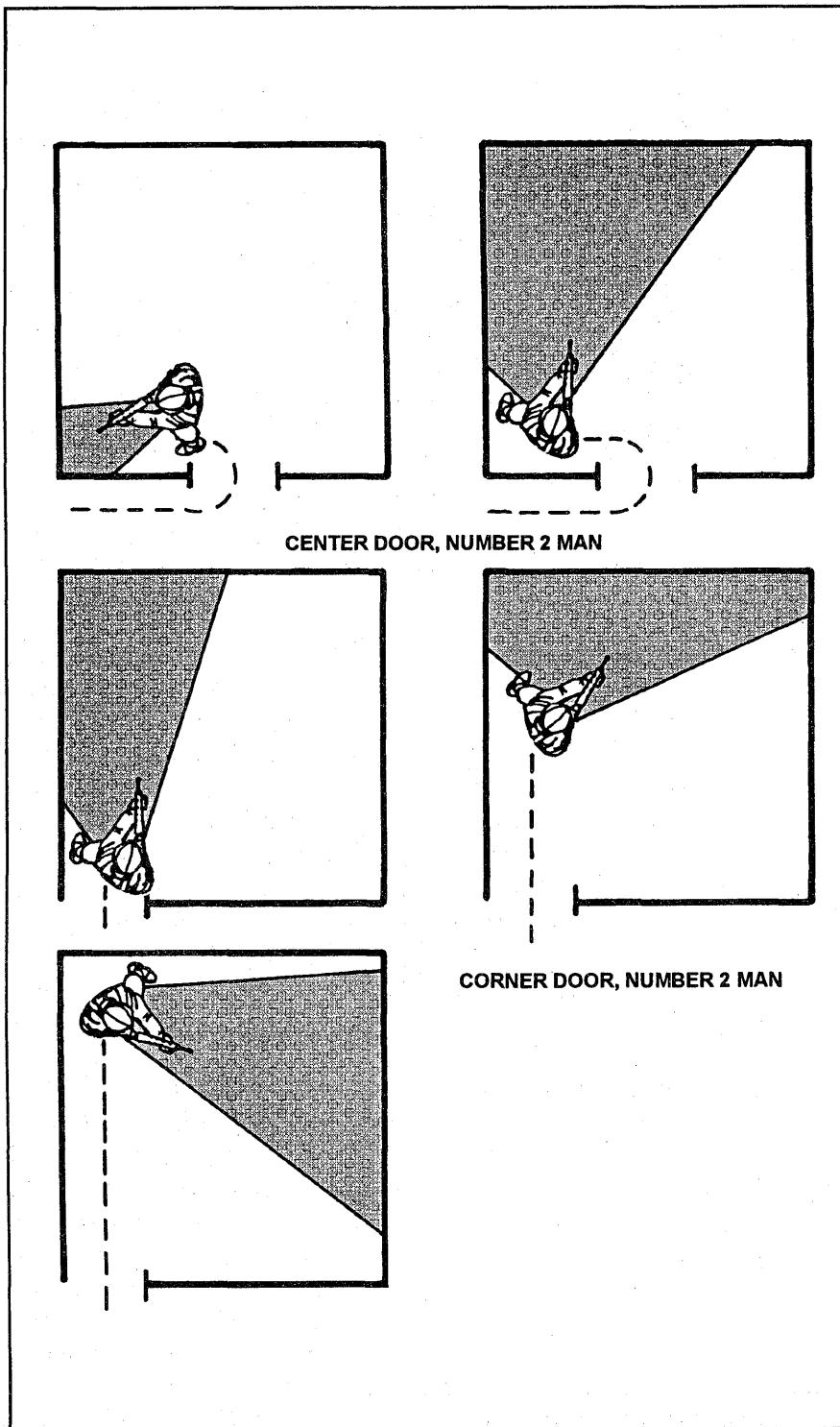


Figure K-6. Path of #2 man, center door and corner door.

(3) The number 3 man (team leader) buttonhooks inside the room at least 1 meter from the door, but between the number 1 man and the door (Figure K-7).

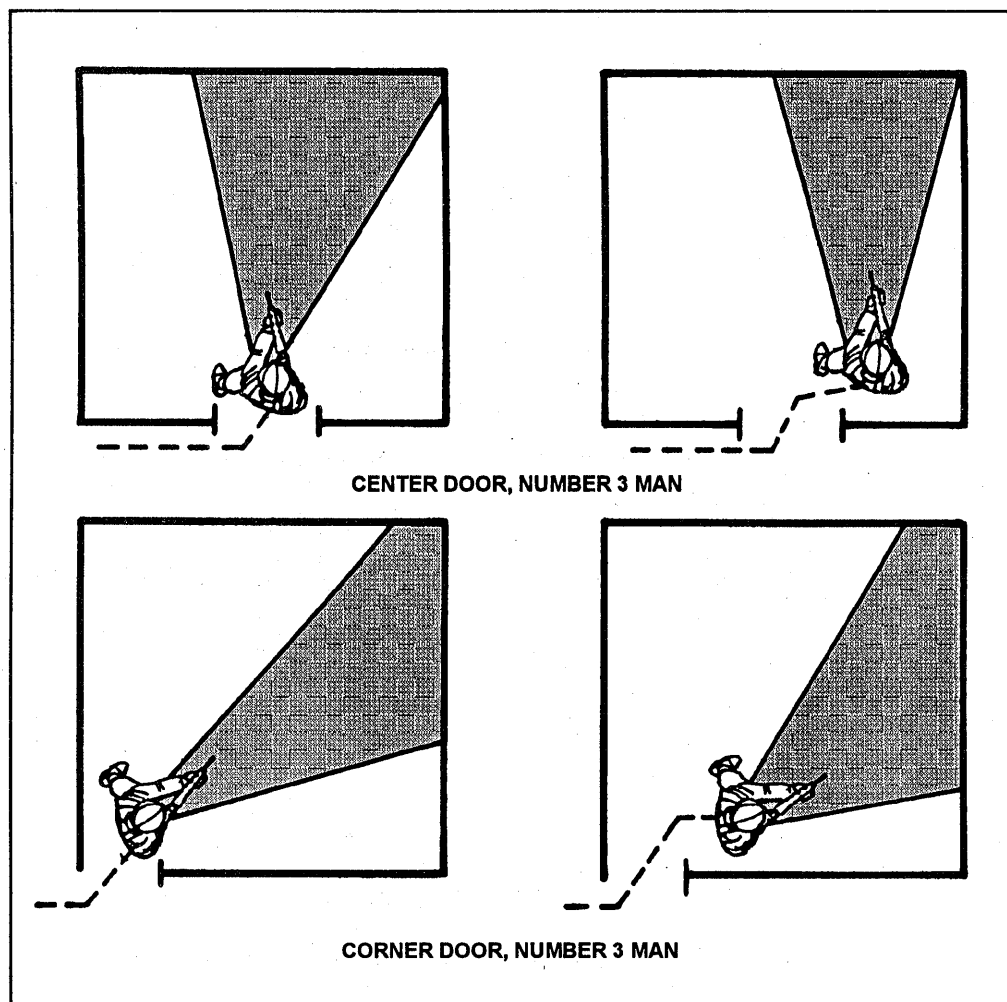


Figure K-7. Path of #3 man, center door and corner door.

(4) The squad leader can either use the number 4 man (normally the SAW gunner) as rear security at the breach site, or he can have him enter with the remainder of the team. If he enters, the number 4 man moves in the direction of the number 2 man and buttonhooks in the same way between the number 2 man and the door (Figure K-8).

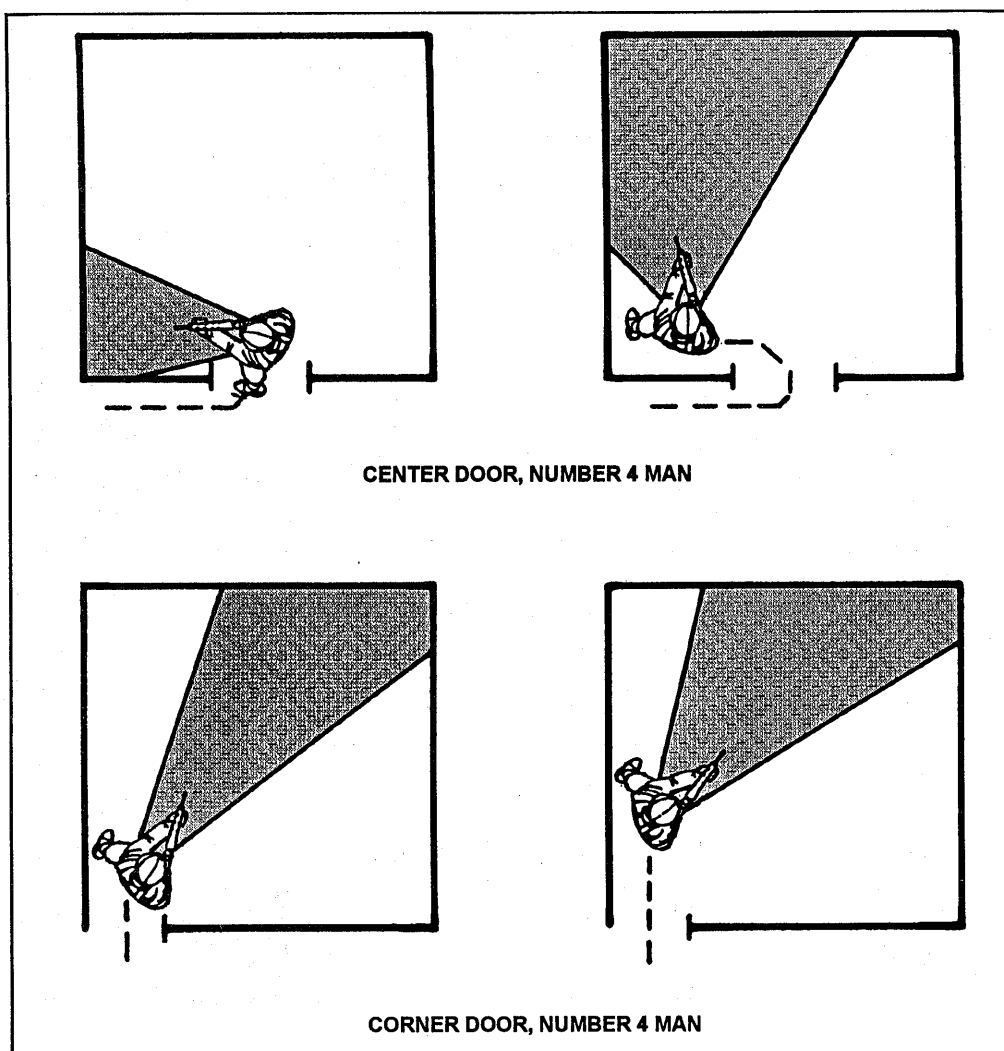
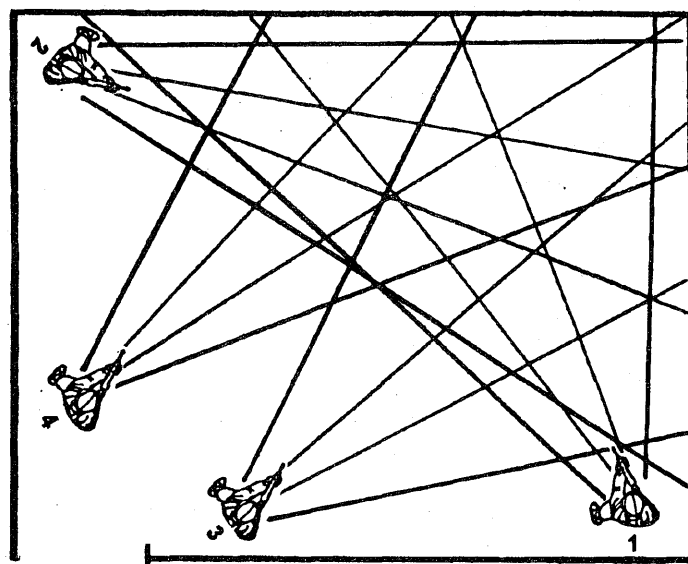


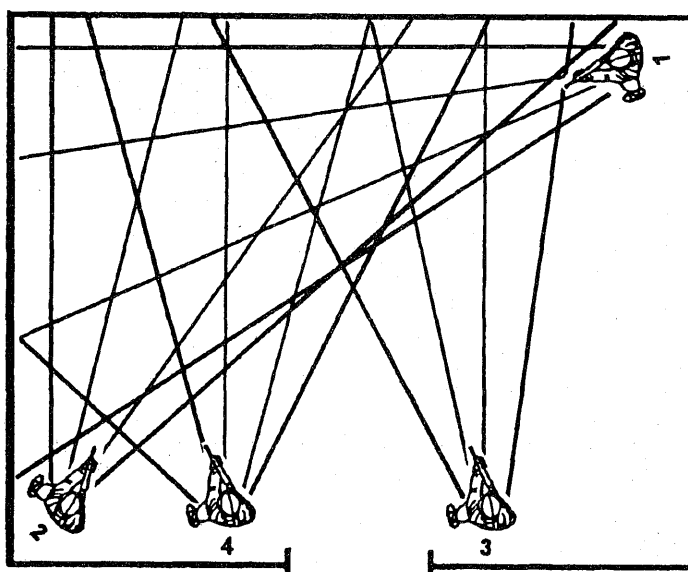
Figure K-8. Path of #4 man, center door and corner door.

c. To make close quarters combat techniques work, each member of the team must know his sector of fire and how his sector overlaps and links with the sectors of the other team members. Team members do not move to the point of domination and then engage their targets. They engage targets as they move to their designated point. However, engagements must not slow movement to their points of domination. Team members may shoot from as short a range as 1 to 2 inches. They engage the most immediate enemy threats first. Examples of immediate threats are enemy personnel who—

- Are armed and prepared to return fire immediately.
- Block movement to the position of domination.
- Are within arm's reach of a clearing team member.
- Are within 3 to 5 feet of the breach point.



CORNER DOOR



CENTER DOOR

Figure K-9. Points of domination and sectors of fire
(four-man team)

d. Each clearing team member has a designated sector of fire that is unique to him initially but expands to overlap sectors of the other team members.

(1) The number 1 and number 2 men are initially concerned with the area along the wall on either side of the door or entry point. This area is in their path of movement, and it is their primary sector of fire. Their alternate sector of fire is the wall that they are moving toward, sweeping back to the far corner.

(2) The number 3 and number 4 men start at the center of the wall opposite their point of entry and sweep to the left if moving toward the left, or to the right if moving toward the right. They stop short of their respective team member (either the number 1 man or the number 2 man).

e. While the team members move toward their points of domination, they engage all targets in their sector. Team members must exercise fire control and discriminate between hostile and non-combatant occupants of the room. Shooting is done without stopping, using reflexive shooting techniques. Because the soldiers are moving and shooting at the same time, they must move using careful hurry. They do not rush with total disregard for any obstacles. Figure K-9 shows all four team members at their points of domination and their overlapping sectors of fire.

f. When full four-man teams are not available for room clearing, three-man and two-man teams can be used. Figures K-10 and K-11 show the paths, points of domination, and sectors of fire for a three-man clearing team. Figures K-12 and K-13 show the same thing for a two-man team.

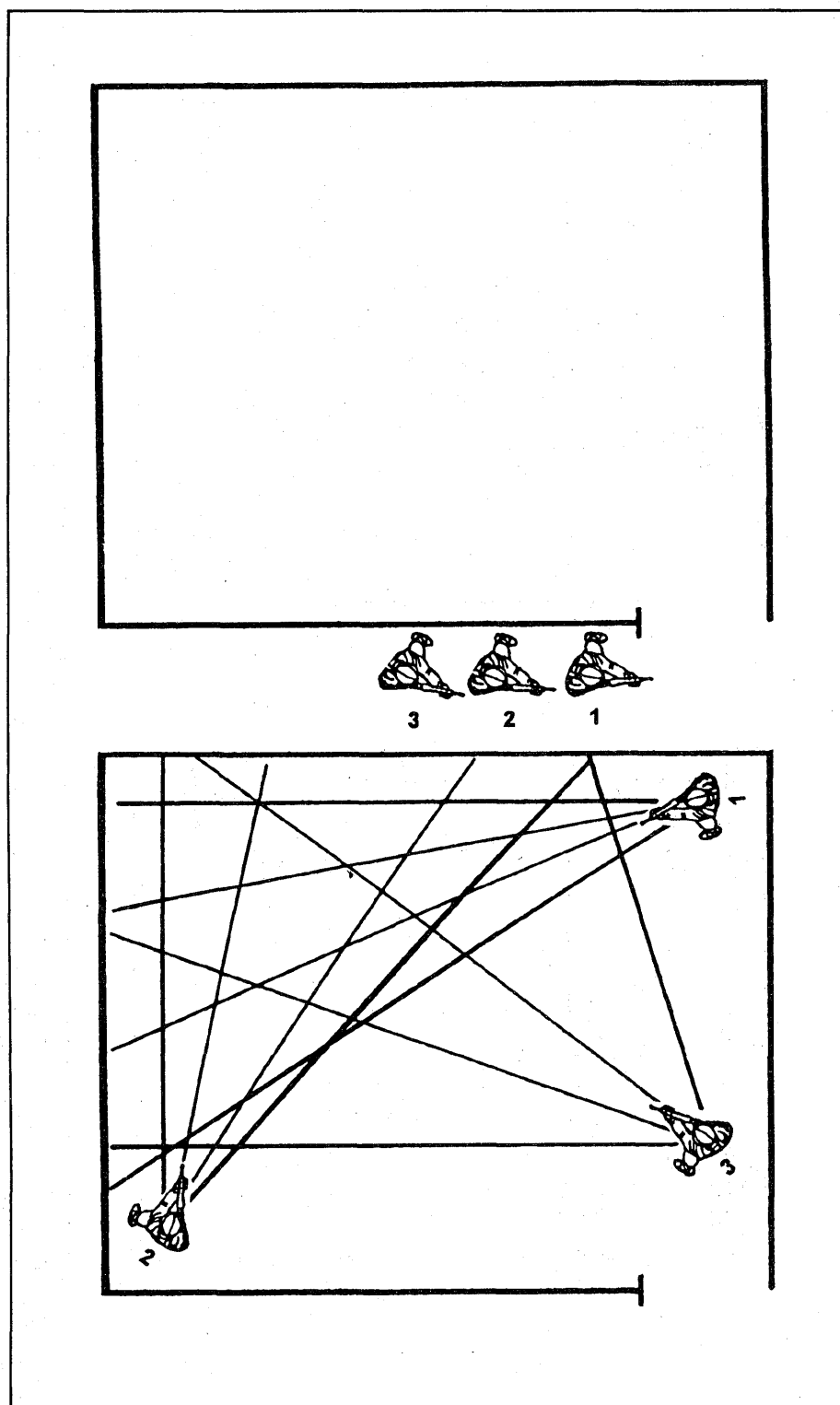


Figure K-10. Points of domination and sectors of fire (three-man team).

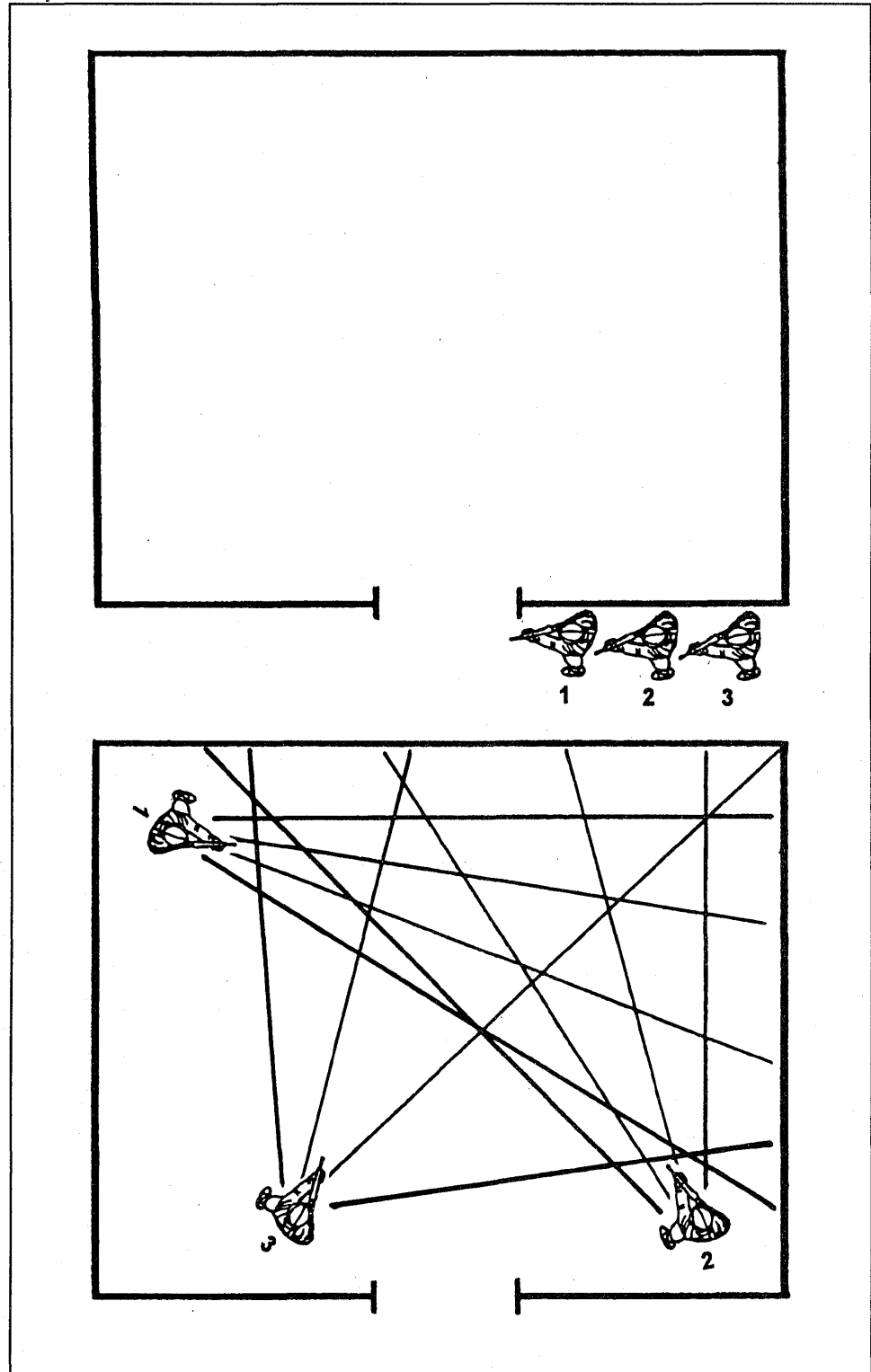


Figure K-11. Points of domination and sectors of fire (three-man team, center door).

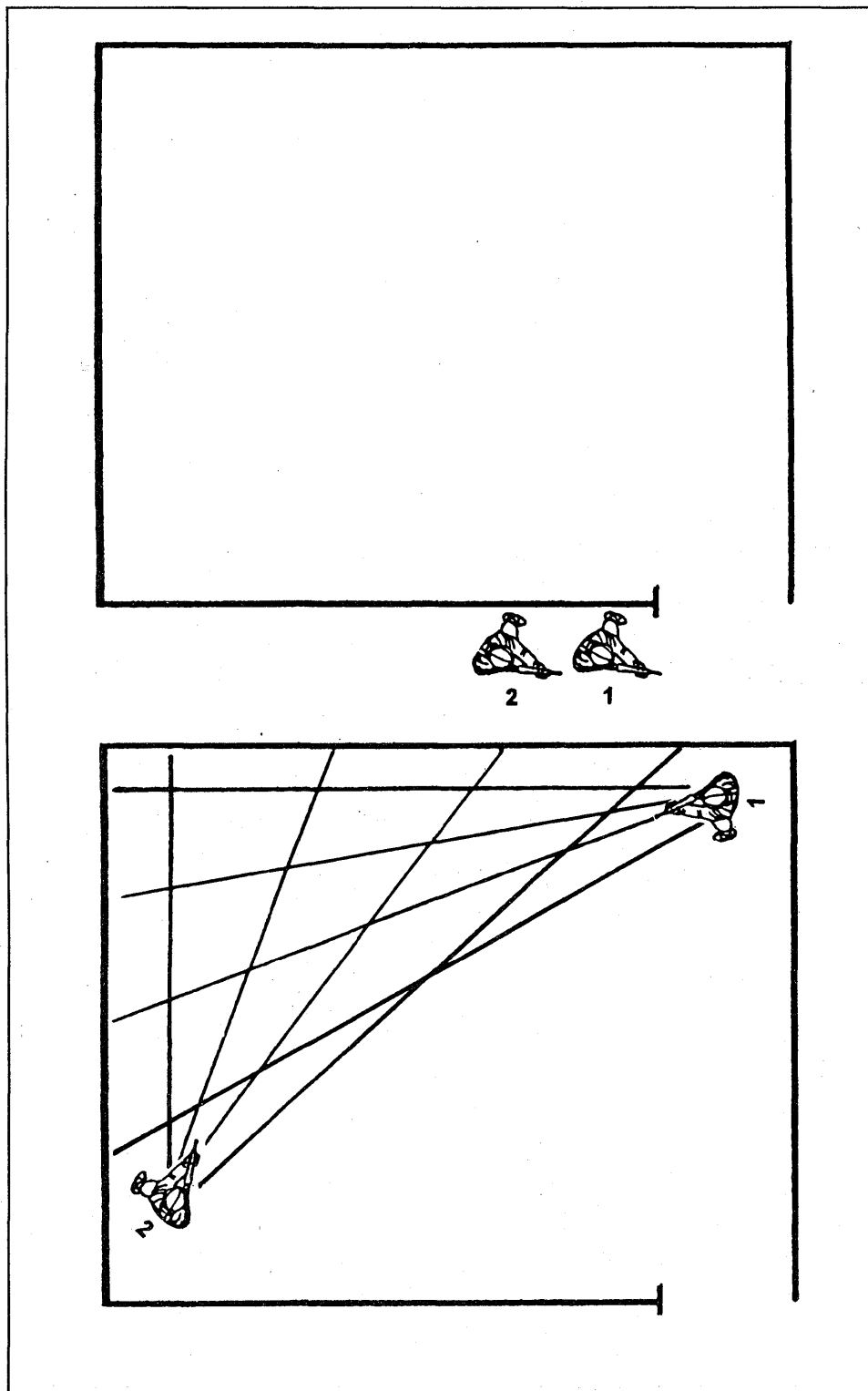


Figure K-12. Points of domination and sectors of fire
(two-man team, corner door).

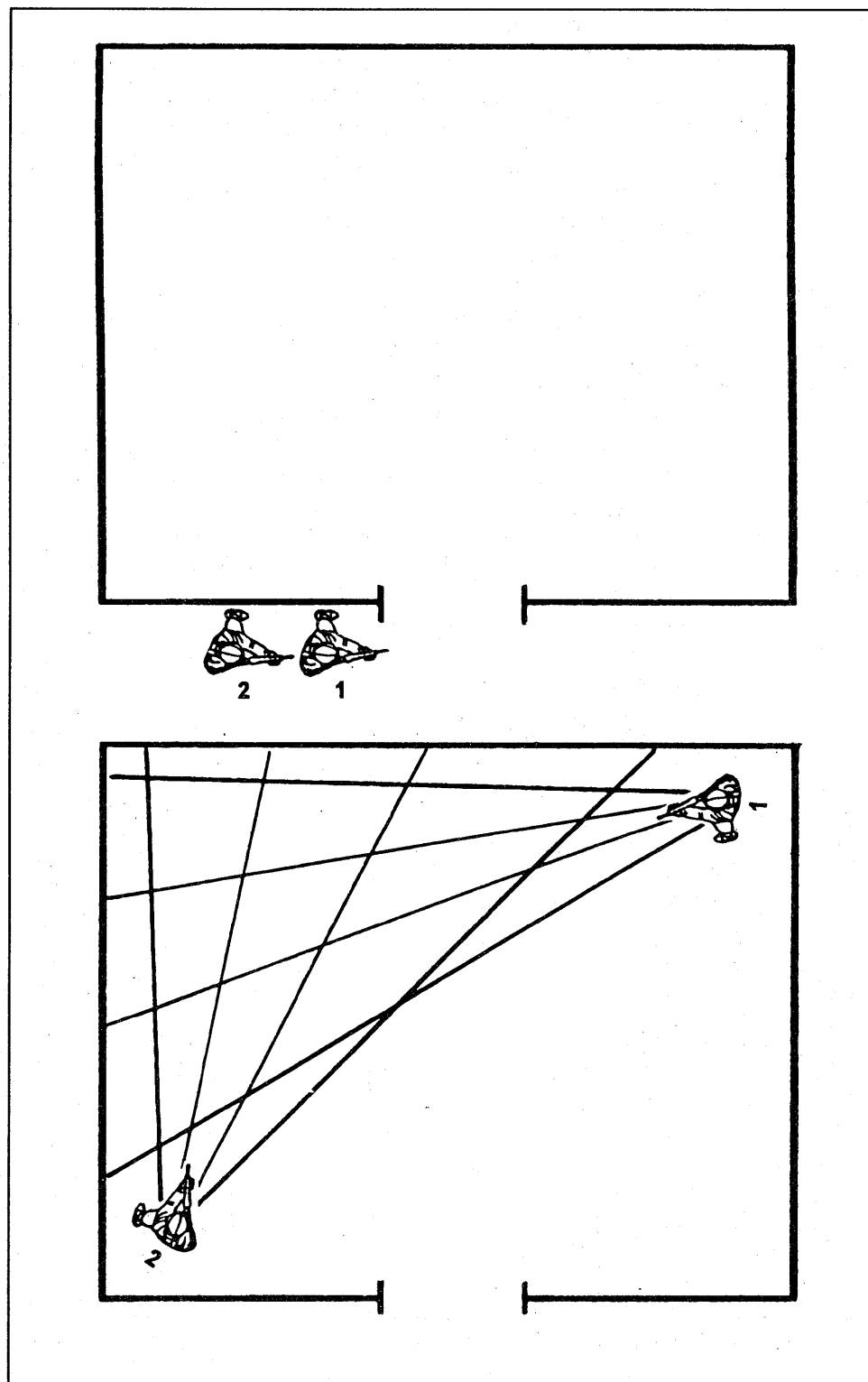


Figure K-13. Points of domination and sectors of fire
(two-man team, center door).

K-11. REFLEXIVE SHOOTING

During close quarters combat, there is little or no margin for error. Too slow a shot at an enemy, too fast a shot at a noncombatant, or inaccurate shots can all be disastrous for the clearing team. Proper weapon carry technique, stance, aiming, shot placement, and trigger manipulation constitute the act of *reflexive shooting*. This method of shooting is the only way for the clearing team members to consistently succeed without excessive casualties.

a. **Weapon Ready Positions.** The two weapon ready positions are low ready and high ready.

(1) **Low ready position.** The butt of the weapon is placed firmly in the pocket of the shoulder with the barrel pointed down at a 45-degree angle. This is the safest carry position. It should be used by the clearing team while inside the room, except when actually entering and clearing.

(2) **High ready position.** The butt of the weapon is held under the armpit, with the barrel pointed slightly up, keeping the front sight assembly under the line of sight but within the gunner's peripheral vision. To engage a target, the gunner pushes the weapon out as if to bayonet the target. When the weapon leaves the armpit, he slides it up into the firing shoulder. This technique is best suited for the lineup outside the door.



Figure K-14. The low ready position for the M16A2.



Figure K-15. The high ready position for the M16A2.

b. **Stance.** The feet are kept about shoulder-width apart. Toes are pointed straight to the front (direction of movement). The firing side foot is slightly

staggered to the rear of the non-firing side foot. Knees are slightly bent and the upper body is leaned slightly forward. Shoulders are square and pulled back, not rolled over or slouched. The head is up and both eyes are open. When engaging targets, the gunner holds the weapon with the butt in the pocket of his shoulder.

c. **Aim.** The four aiming techniques all have their place during combat in built-up areas, but the aimed quick-kill technique is the one most often used in close quarters combat.

(1) ***Slow aimed fire.*** This technique is the most accurate. It consists of taking up a steady, properly aligned sight picture and squeezing off rounds. It is normally used for engagements beyond 25 meters or when the need for accuracy overrides speed.

(2) ***Rapid aimed fire.*** This technique features an imperfect sight picture in which windage is critical but elevation is of lesser importance. When the front sight post is in line with the target, the gunner squeezes the trigger. This technique is used against targets out to 15 meters and is fairly accurate and very fast.

(3) ***Aimed quick kill.*** This technique consists of using a good spot weld and placing the front sight post flush on top of the rear peep sight. It is used for very quick shots out to 12 meters. Windage is important, but elevation is not critical with relation to the target. This technique is the fastest and most accurate. With practice, soldiers can become deadly shots at close range.

(4) ***Instinctive fire.*** This technique is the least desirable. The gunner focuses on the target and points the weapon in the target's general direction, using muscle memory to compensate for lack of aim. This technique should be used only in emergencies.

d. **Shot Placement.** In close quarters combat, enemy soldiers must be incapacitated immediately. Shots that merely wound or that are mortal but do not incapacitate the target instantaneously are only slightly better than clean misses. Members of clearing teams should concentrate on achieving solid, well-placed head shots. This shot placement is difficult for some soldiers to learn, having been taught previously to aim at center of mass.

(1) The only shot placement that guarantees immediate and total incapacitation is one roughly centered in the face, below the middle of the forehead, and above the upper lip. Shots to the side of the head above the horizontal line passing through the ear opening to just below the crown of the skull and from the cheekbones rearward to the occipital lobe are also effective. With practice, accurate shot placement can be achieved. (See Figure K-16 for proper shot placement.)

(2) Shots to the spinal column below the jaw and above the sternum can neutralize a target immediately. However, the spinal column is a narrow target and misses by only a few centimeters may cause no immediate reaction or a delayed reaction in the target. Even though severely wounded, the enemy soldier may be able to return effective fire.

(3) Shots to the center of the chest that enter the lung/heart region are normally fatal but may take several seconds to incapacitate the target. During this time, the opponent may be able to return effective fire. This region of the

body may also be shielded by military equipment or protective vests that can often deflect or absorb rounds and prevent immediate incapacitation.

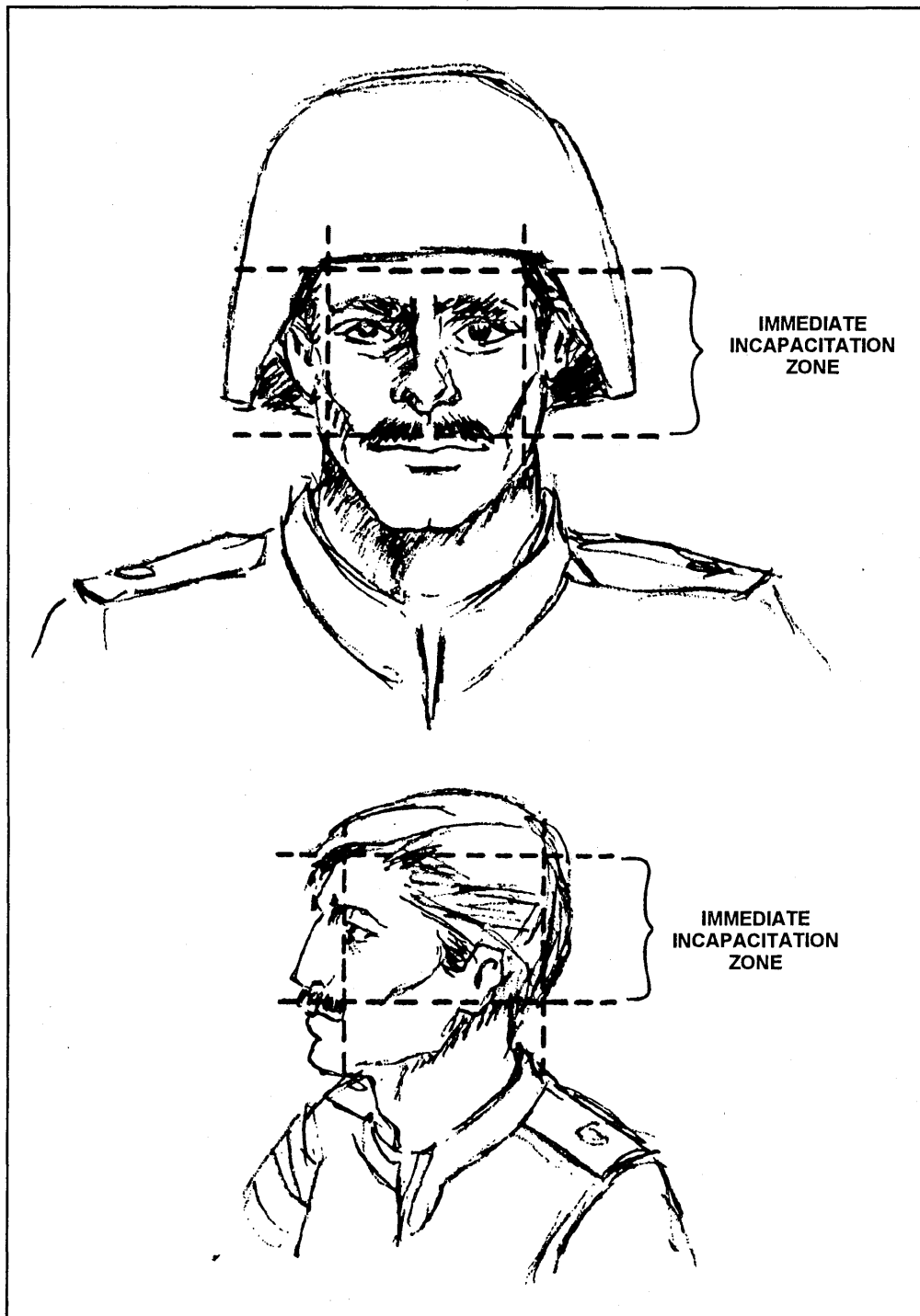


Figure K-16. Proper shot placement.

(4) Shots to the abdomen or lower extremities are rarely effective in rendering an opponent immediately incapable of returning fire, even if they are ultimately fatal.

e. **Trigger Manipulation.** Rapid, aimed, semiautomatic fire is the most effective method of engaging targets during close quarters combat. As each round is fired from the aimed quick-kill position, the weapon's recoil makes the front sight post move in a small natural arc. The gunner should not fight this recoil. He should let the weapon make the arc and immediately bring the front sight post back onto the target and take another shot. This two-shot combination is known as a *double tap*. Soldiers must practice the double tap until it becomes instinctive. Clearing team members continue to fire double taps until the target goes down. If there are multiple targets, team members double tap each one and then return to reengage any enemy left standing or who are still trying to resist.

(1) Controlled three-round bursts fired from the M16A2 rifle are better than fully automatic fire, but they are only slightly faster and not as accurate or effective as rapid, aimed semiautomatic fire.

(2) Fully automatic fire with the M16A2 rifle or carbine is rarely effective and may lead to unnecessary noncombatant casualties. Not only is fully automatic fire inaccurate and difficult to control, but it also rapidly empties ammunition magazines. A clearing team member who has expended his ammunition while inside a room with an armed, uninjured enemy soldier will become a casualty unless his fellow team members can quickly intervene.

K-12. TARGET DISCRIMINATION

Target discrimination is the act of quickly distinguishing between combatant and noncombatant personnel and engaging only the combatants. US forces engage in close quarters combat in order to apply discriminating combat power and limit unnecessary casualties among noncombatants. Therefore, target discrimination is vital in close quarters combat. If there is no need for selective engagements, that is, only combatants attempting to resist are present, a much less discriminating use of firepower is possible. However, even if an area is known to be free of noncombatants, other soldiers moving through the area may be mistaken as enemy and engaged unless clearing team members are disciplined and well-trained in fire control and target discrimination. Even with well-trained, disciplined soldiers, close quarters combat can result in unintentional casualties among noncombatants. Commanders must recognize this and take steps to relieve the stress it causes soldiers.

K-13. SAFETY AND FORCE PROTECTION

Close quarters combat is extremely dangerous, and even training for it can be hazardous. Only well-trained, disciplined soldiers will be able to execute these techniques successfully. In training and in combat, safety and force protection are vital command considerations.

a. Leaders at all levels must enforce safe handling of weapons and demolitions. The concern that individual soldiers not be injured in accidents is essential to mission accomplishment. Unintentional and unsafe weapons fire or detonation of explosives or munitions can jeopardize the mission of the clearing team and subsequently the entire unit.

b. Soldiers engaged in close quarters combat should wear all of their protective equipment.

(1) Soft body armor, such as the standard Army-issue Kevlar vest, is effective in preventing death or serious injury from high-velocity fragments that strike the torso area. Although the Kevlar protective vest is effective, flexible, and relatively comfortable, it is not designed to stop bullets. As a rule, soft body armor will stop some low-power handgun rounds but not rifle or carbine ammunition.

(2) Some versions of hard body armor will stop almost any round fired at it. They tend to be heavy and stiff but have been proven effective during close quarters combat. If a commander knows his unit will be conducting lengthy close quarters combat, he should request a special issue of threat level III protective equipment. This equipment is excellent, but soldiers must train and rehearse wearing it before they enter combat. All close quarters combat is tiring, and soldiers wearing threat level III vests will tire or overheat more quickly.

(3) The standard Army Kevlar helmet and ballistic protective eyeglasses have also been proven to significantly reduce casualties during close quarters combat. Historically, eye injuries caused by small metal fragments or pieces of stone or concrete have been a large percentage of casualties during combat in built-up areas.

(4) Hard plastic knee and elbow protectors are available upon special request. They are useful, especially during prolonged search and clear operations. They prevent injury from rubble and broken glass when kneeling or prone.

c. Detailed knowledge of weapons and munitions effects is important to the safety of members of the clearing team, as well as to mission accomplishment. Most interior walls of buildings do not stop rifle fire. Fragments from grenades often penetrate interior walls. Standard home furnishings or office furniture offer little protection from high-velocity rounds. Excessive amounts of demolitions used to breach a wall may knock it down instead, perhaps even bring the roof of the building down also.

K-14. CLOSE QUARTERS COMBAT DURING DARKNESS

Mission accomplishment is the most important criterion of night operations, not the use of special equipment. All the specialized night vision equipment in the US armory cannot replace a trained, skilled soldier intent on mission accomplishment. Even in today's era of high technology, no failsafe system exists that allows an individual soldier to effectively identify and engage targets in total darkness. The commander must carefully consider the situation

and the equipment available to him before he decides whether to use visible, invisible, or no artificial light during close quarters combat.

a. **Equipment.** Some specialized night vision equipment is available to the soldier now; other equipment will be available in the future.

(1) **AN/PAQ-4 aiming light.** This device projects a pulsing dot of IR light along the weapon's line of sight. The dot is invisible to the naked eye, but it can be seen by personnel wearing night vision goggles. Gunners with weapons equipped with the AN/PAQ-4 aiming light simply place the projected spot on the target and fire.

(2) **AN/PVS-5 and AN/PVS-7 night vision goggles.** These goggles are lightweight, battery-powered passive devices worn on the head. Each has an IR-emitting light source for close-up illumination.

(3) **Tactical lights.** These devices are small, lightweight, battery-powered white lights that can be attached to weapons. The light is activated by either a pressure switch or an on/off switch. An IR filter can be attached to most tactical lights to provide covert illumination. The most common example of a tactical light is sold under the name Maglite. This light can be attached to weapons using hose clamps or heavy tape. They must be checked periodically, because they can loosen and shift.

(4) **Red dot sights.** These devices are lightweight, battery-powered optical sights attached to the top of the weapon. A red dot in the sight aligns the weapon and the target. These sights are for use in low light levels, not total darkness. They do not assist in identifying targets.

(5) **Active laser devices.** These devices are lightweight, battery-powered, visible light-emitting sights. The device projects a red dot onto the target that corresponds to the point of bullet impact. These devices are not effective in sunlight.

(6) **Various thermal weapons sights.** In the near future, thermal weapons sights will be available to detect targets in total darkness.

b. **Use of White Light.** Although not covert, white light has several advantages:

- The equipment is readily available and reliable.
- No additional training is required.
- It offers the fastest means of identifying targets and searching a room.
- It allows color vision.

The main disadvantage is that an active light source can compromise a clearing team's position inside a room or building. Another disadvantage is that a light may be activated too soon and alert the enemy to the clearing team's presence.

EMPLOYMENT OF ARMED HELICOPTERS IN BUILT-UP AREAS

Wherever infantry forces are sent in the world, whether for combat operations or operations other than war, they will operate part of the time in built-up areas. Operating alongside and supporting them will be armed helicopters flown by technically skilled and tactically proficient US aviators. The commander or small-unit leader on the ground are responsible for ensuring the actions of these powerful aircraft are smoothly integrated into the combined arms team. Joint operations will mean that the aircraft supporting ground forces may be Army or USMC. During combined and coalition operations, especially during OOTW, it is more and more likely that armed helicopters from other nations may support US forces. In those cases, detailed information on their capabilities and employment techniques must be obtained through liaison channels.

L-1. MISSIONS OF ARMED HELICOPTERS SUPPORTING MOUT

Infantry units may be supported by a variety of armed helicopters ranging from fully modernized AH-64s or somewhat less capable AH-1s, to lightly armed but agile OH-58Ds and AH-6s. Regardless of the specific type of armed helicopter available, the same missions and tasks can be accomplished due to the inherent flexibility of Army aviation units.

a. The most common missions assigned to armed helicopters during MOUT are the following:

- (1) Escort of troop-carrying aircraft during air assaults.
- (2) Overwatch and supporting attacks integrated with the ground commander's maneuver.
- (3) Interdiction and destruction of enemy armored vehicles moving against friendly forces.
- (4) Precision engagement of hardened point targets.

b. In addition to the missions listed above, armed helicopters may be called on to perform some additional, nontraditional roles during MOUT. This is particularly true during OOTW in urban areas. Additional missions may include the following:

- (1) Assisting, for limited periods, in the control and coordination of fires with the maneuver of ground forces.
- (2) Providing limited relay of radio messages from isolated ground units.
- (3) Marking or identifying specific buildings and areas by smoke, fires, or targeting lasers.
- (4) Videotaping routes or objectives for later analysis by ground commanders.
- (5) Providing navigational and directional assistance to ground units.

(6) Providing limited area illumination by infrared or white light using either on-board sources or illumination rockets.

(7) Providing countersniper and counter-mortar/rocket armed reconnaissance patrols around friendly unit locations.

L-2. PLANNING CONSIDERATIONS FOR ARMED HELICOPTER EMPLOYMENT

Although armed helicopters provide a flexibility and responsiveness almost unequaled by any other means of fire support, detailed planning is required to effectively integrate them with ground operations to accomplish the overall mission. The following must be considered when planning employment of armed helicopters.

a. **Increased Exposure to Direct Fire.** The ground-fire threat to armed helicopters increases during MOUT. Urban areas force the concentration of units and provide excellent cover and concealment for enemy gunners. In order to limit exposure to heavy antiaircraft weapons, helicopters may have to stay low and move quickly. This increases their vulnerability to light small-arms fire.

b. **Obstacles to Flight.** Obstacles within urban areas are more numerous and dangerous than in any other environment. These obstacles include such things as—

- (1) Power lines and power cable pylons.
- (2) Hard-to-see telephone lines, trolley cables, and traffic light cables.
- (3) Light poles, rooftop antennas, and telecommunication towers.
- (4) Towering buildings that may prevent rapid vertical maneuvering of heavily loaded aircraft.

c. **Navigational Difficulties.** Even though pilots can often see better than observers on the ground, because most maps do not show the vertical development of urban terrain, pilots can easily become temporarily misoriented. Navigational aids, such as GPS, have lessened but not eliminated this problem. Rapid displacement from position to position can sometimes create confusion between aerial and ground observers as to cardinal directions or locations. Mission planning should include the use of upgraded photoimagery whenever possible. Newly developed areas or buildings may not show on recent maps. Some advanced computer simulation aids are now available to generate three-dimensional aerial views, which can be very useful especially during OOTW. Differing datums between the ground unit's maps and the aerial unit's GPS can cause significant confusion unless compensated for.

d. **Weapons Limitations.** Many characteristics of operations in urban areas limit weapons employment.

(1) Weapons use may be limited by the short arming/slant ranges within the urban area. Precision weapons, such as TOW and Hellfire missiles, require about 500 meters minimum range to reliably arm and stabilize on the intended target. Often, fire from longer ranges actually improves accuracy.

(2) Extensive use of precision weapons by several units in close proximity may cause coordination problems with target identification and designation.

(3) Laser designation by both ground and aerial systems may be degraded by the large expanses of polished, flat reflective surfaces common in many urban areas.

(4) With the obvious exception of precision strikes by TOW or Hellfire, aerial fires can rarely destroy a target or kill large numbers of enemy forces within buildings. These fires provide excellent suppression, however, and can drive enemy forces away from firing positions or fix the enemy in place until ground maneuver forces can destroy him. Enemy positions that have been struck by fire can normally be reoccupied quickly by the enemy.

(5) Target identification and marking may be difficult because of heavy smoke and dust rising from urban fires and explosions. Some smoke from fires in industrial areas may be highly toxic or irritating. Pilots may have to don chemical protective equipment that hinders target detection and engagement. Friendly unit locations and personnel can be marked with colored panels, glint tape, strobe lights, and colored smoke. Targets can be marked with infrared laser pointers, such as the GCP-1 Ground Commander Pointer/Illuminator, colored M203 smoke rounds, M203 or mortar flares burning on the ground, or tracer fires. In some situations, improvised spotlights can also be used.

(6) If the combat situation allows, pilots should make a nonfiring (dry) run first before returning for a firing pass. Although fire from stationary positions is more accurate, running fire is normally safer for the aircraft due to enemy ground fire. If possible, ground commanders should avoid directing pilots along a gun-target line that passes over friendly troops. Gun-target runs that are perpendicular to the friendly unit's front are normally best.

e. Aircraft Power Limitations. The need to deliver hovering fires from temporary battle positions may require the aircraft to carry less than a full load of munitions or fuel. This is especially true with older model aircraft in hot, wet climates. Reduced loads mean more frequent trips to forward area refuel and rearm points and less time on station.

f. Command and Support Relationships. From the ground unit perspective, armed helicopters are most effective when they operate under the OPCON of the ground unit commander closest to the enemy. Normally, the infantry battalion is the lowest level granted formal OPCON of armed helicopters. However, in an urban area the battalion commander is rarely able to identify the precise location of enemy forces or to coordinate aerial fires with friendly squad and platoon maneuver. He often must pass the responsibility for close coordination of armed helicopter fires to the small-unit commander or leader on the scene. This commander can direct the efforts of only a few aircraft at a time, normally a scout weapons team consisting of an unarmed observation aircraft and an attack helicopter or two armed aircraft. It may be more effective for the aviation unit to retain control of its individual aircraft and operate by continuously rotating armed helicopter elements into the battle area where they then coordinate their attacks with the ground commander's maneuver. Generally, the smaller and more decentralized the combat actions, the better it is to have armed aircraft coordinate directly with the small-unit leader on the ground. The larger, more centralized the combat action, the better it is to retain control of armed aircraft by the aviation

headquarters. Whichever command and support relationship is chosen, both the ground and the aviation headquarters must understand what is expected of the other. Close liaison and unambiguous verbal communication are important.

L-3. ARMED HELICOPTER OPERATIONS IN LIMITED VISIBILITY

Although US helicopters possess the most sophisticated night vision equipment in the world, armed helicopter operations in limited visibility are difficult and require extra care.

a. The extensive use of GPS and handheld laser pointers or designators eases the problems associated with night navigation, orientation, and target identification.

b. Operations that involve twilight, either dawn or dusk, present special problems for aircrews using image-intensification NVDs. The rapid change in the amount of illumination makes it difficult for pilots to observe the ground and see other aircraft. In the confined airspace low over an urban area, with friendly and enemy forces close by and dangerous obstacles, such as antennas, hard to see, armed helicopter support is difficult and dangerous. Infantry units should seek the advice of experienced aviators when planning night operations, especially those that may extend through a period of twilight.

c. Artificially lit urban areas create a hazard for pilots using image-intensification NVDs. One method of bleaching out bright city lights is to use the infrared light found on most US aircraft. This makes it easier to see and avoid obstacles, especially rooftop antennas, which stand out well in infrared light.

d. Forward-looking infrared devices found on OH-58D, AH-64, and some SOF aircraft are not affected by artificial light and are generally effective targeting systems in urban areas. Depending on the equipment used by the ground commander, these aircraft may or may not be able to detect laser pointer devices. Close liaison with the aviation unit prevents misunderstandings and maximizes the combat effectiveness of armed helicopters supporting infantry maneuver in urban combat.

FIELD-EXPEDIENT BREACHING OF COMMON URBAN BARRIERS

An integral part of combat in built-up areas is the need to gain access to compounds, buildings, and rooms. Mechanical breaching of doors or windows using weapons fire, sledgehammers, bolt cutters, saws, or crowbars is almost always an option for infantrymen attempting to gain rapid access, but it is sometimes too slow or exposes them to too much risk of enemy fire. Explosive breaching is often the fastest and most combat-effective method. With a little time to prepare, units can use slightly modified standard Army demolitions to breach all common urban barriers.

M-1. FORCE PROTECTION

As in all operations involving demolitions, soldiers must take care when fabricating, carrying, and using field-expedient explosive devices. Leaders must ensure that all the standard procedures and precautions outlined in doctrinal and training material for Army demolitions activities are followed. This is dictated by more than just the commander's concern for the safety and welfare of his individual soldiers. Accidental or premature detonation of demolitions during combat not only can injure or kill friendly soldiers but also can jeopardize the unit's mission. During combat, soldiers often need to position themselves close to breach points in order to enter quickly and overcome enemy resistance before the effects of the explosion subside. However, a soldier who is too close to an explosion and injured by flying debris is considered a casualty the same as one who is shot by the enemy. The unit must accomplish its mission without sustaining friendly casualties from its own demolitions. All demolitions have the potential to cause injury to nearby personnel, mainly from flying debris but also from blast and noise overpressure.

M-2. BREACHING REINFORCED AND NONREINFORCED EXTERIOR WALLS

The Army issues both bulk explosives (TNT or C4) and prepackaged satchel charges that are powerful enough to breach all but the most heavily reinforced exterior walls. In some situations, satchel charges may be unavailable or they may prove to be too powerful for the breach required. In high-intensity urban conflict, the situation may call for large amounts of bulk explosive, but in many situations the commander wants to create a smaller-size hole than the M37 or M183 satchel charges normally produce. Smaller, yet effective, satchel charges can be improvised. Experimentation can determine the correct size of

these improvised satchels, depending on the types of walls found in the battle area.

a. General-purpose satchel charges can be assembled using empty machine gun ammunition bandoleers filled with various amounts of C4 explosive.

(1) Connect a short length of detonation cord firmly to the explosive and leave it dangling. Tape the explosive securely into the bandoleer.

(2) Hang the charge on a wall by the bandoleer strap or prop it against the wall using a stick or other object. Satchel charges detonated while held firmly against the target wall at about shoulder height produce the best effects.

(3) Prime the charge, attaching either an electric or nonelectric firing system to the short length of detonation cord left dangling.

When used against nonreinforced concrete walls, a satchel charge containing 2 pounds of C4 normally produces a mousehole; 5 pounds create a hole large enough for a man to move through; 7 pounds create a large hole through which two men can move simultaneously; and 10 pounds can blow a hole large enough to drive a vehicle through. The 10-pound charge may also destroy the entire building if it is not of sturdy construction.

b. A useful breaching charge improvised by light engineer sappers during combat operations in Somalia consisted of a 3-foot length of engineer picket (U-shaped engineer stake) packed with 4 to 8 pounds of C4. The explosive was primed with detonation cord and taped securely to the picket. When needed, the picket was placed upright with its flat side against the wall, held to the wall by another stake, and then detonated. This charge could be rapidly fabricated, was sturdy, and could be easily and quickly emplaced. According to reports from the field, this device would blow a hole about 4 feet wide and 8 feet high in a nonreinforced concrete wall (common in the third world). The charge would throw fragments from the picket straight back for long distances (from 50 to 100 meters) but was fairly safe to either side. In combat, infantrymen could stand about 20 meters from the picket, crouched tightly against the wall with their backs turned to the explosive, without undue risk. This allowed them to follow up on the explosion with a rapid assault into the compound or building before the occupants could recover.

M-3. BREACHING INTERIOR WALLS AND PARTITIONS

Interior walls generally require much less explosive to create a satisfactory breach than do exterior, load-bearing walls. An easily fabricated silhouette charge can further reduce the amount of explosive needed to breach plywood, sheet rock, or light plaster walls. It can also be used to breach wooden or metal doors. This charge produces a hole large enough for a man to run through. It can be emplaced quickly and throws only a small amount of dangerous material back into the first room.

a. Tape two E-type silhouette targets or similar stiff cardboard together. To make the charge easier to carry, it can be built to fold in the middle (Figure M-1). Rounding the corners makes the charge easier to handle.

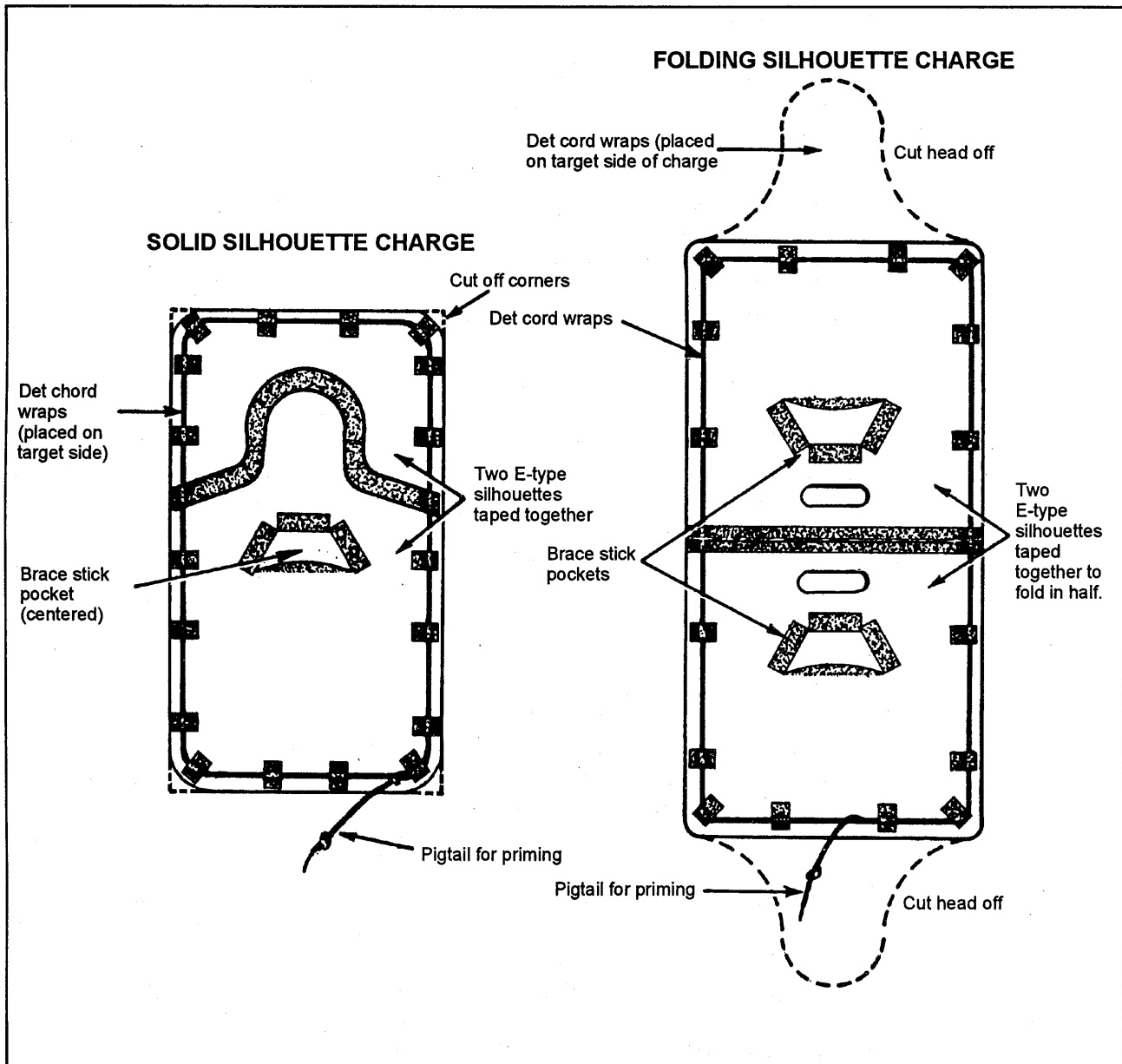


Figure M-1. Construction of solid and folding silhouette charges.

b. Place detonation cord or flexible linear-shaped charge (FLSC) around the edges of the silhouettes, leaving a 6-inch tail for priming. Secure the cord to the silhouette using sturdy tape. (See Table M-1 for the appropriate number of wraps of detonation cord or FLSC to breach various barriers.) Tape several small dowels or other materials at various places around the silhouette if using FLSC. This provides the necessary stand-off distance to ensure the maximum shaped charge effect. (See Table M-2 for the required stand-off distance for various sizes of FLSC.)

Type of Obstacle	Detonation Cord Needed	FLSC Needed
Hollow-core door	1 wrap	75 grain/foot
Particle-filled door (1 inch)	2 wraps	75 grain/foot
Solid wood door (2 inches)	3 wraps	75 grain/foot
High-quality solid door	4 wraps	225 grain/foot
1/4-inch plywood	1 wrap	75 grain foot
1/2-inch plywood	2 wraps	75 grain/foot
3/4-inch plywood	3 wraps	75 grain/foot
Light metal door	NA	225 grain/foot
Medium steel door	NA	300 grain/foot
Heavy steel door	NA	300 grain/foot

Table M-1. Silhouette charge explosive loads.

Standoff Required for FLSC	
75 grain	0 - 1/16 inch
225 grain	1/8 inch
300 grain	1/8 inch - 3/16 inch

Table M-2. Standoff required for flexible linear-shaped charges

c. Using heavy-duty tape, place three or four strips of double-sided contact tape on the front of the silhouette from top to bottom. Construct a sturdy pocket for a brace stick in the appropriate position on the back of the silhouette.

d. Pull the covering off the double-sided tape and place the charge against the wall at knee height, bracing it if necessary. Prime, take cover, and detonate.

M-4. DOOR-BREACHING CHARGES

Several different field-expedient charges can be used to breach interior or exterior doors. Among these are the general-purpose charge, the rubber band charge, the flexible linear charge, and the doorknob charge. All can be made ahead of time and are simple, compact, lightweight, and easy to emplace.

a. The *general-purpose charge* is the most useful preassembled charge for breaching a door or other barrier. As its name implies, it is useful not only for door breaching, but it can also cut mild steel chain and destroy captured enemy equipment.

(1) Start building the general-purpose charge with a length of detonation cord about 2 feet long. Using another length of detonation cord, tie two uli knots (Figure M-2) around the 2-foot long cord. The uli knots must have a minimum of six wraps and be loose enough for them to slide along the main line. Trim excess cord from the uli knots and secure them with tape, if necessary.

(2) Cut a block of C4 explosive to a 2-inch square. Tape one uli knot to each side of the C4 block, leaving the length of detonation cord free to slide through the knots (Figure M-3).

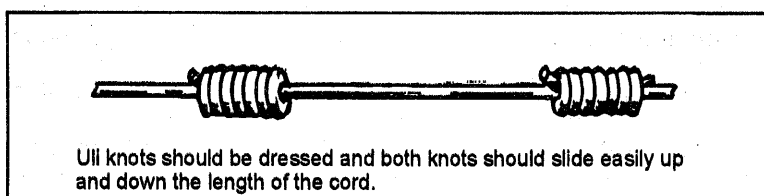


Figure M-2. Sliding uli knots.

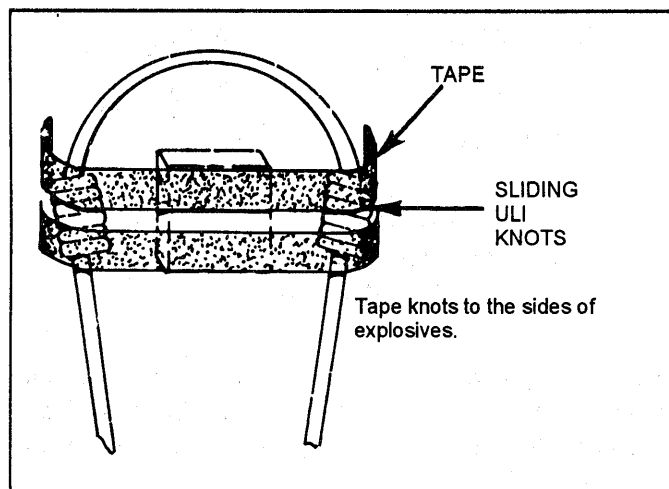


Figure M-3. Completed general-purpose charge.

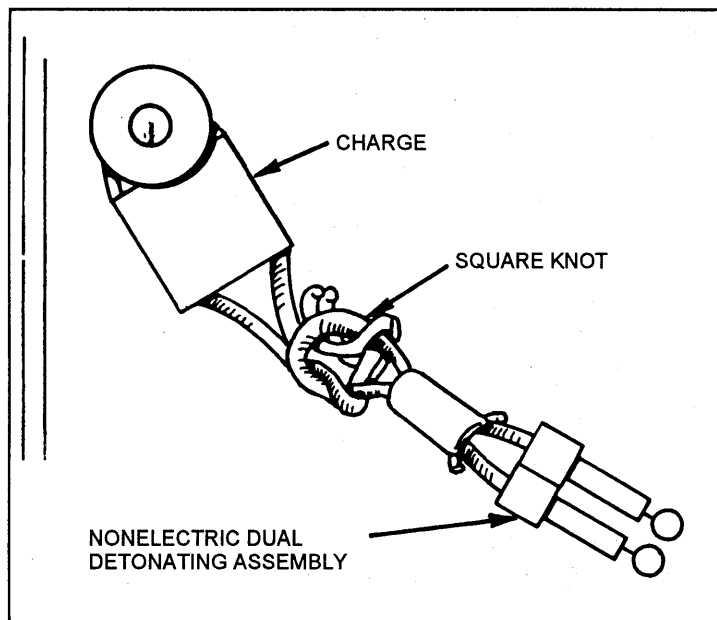


Figure M-4. Charge placement against doorknob.

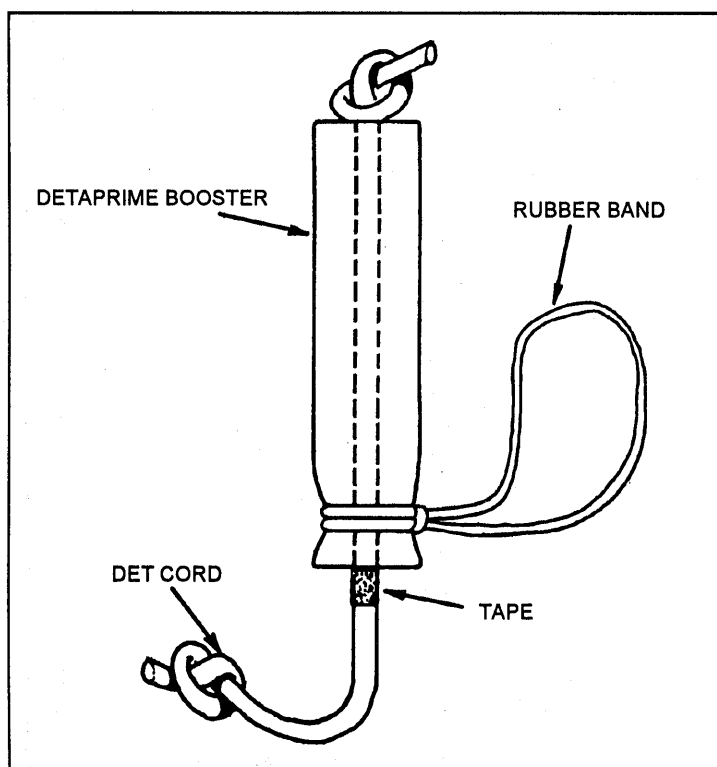


Figure M-5. Rubber band charge with Detaprime booster.

(3) To breach a standard door, place the top loop of the charge over the doorknob. Slide the uli knots taped to the C4 so that the charge is tight against the knob. Prime the loose ends of the detonation cord with either an electric or nonelectric firing system and detonate (Figure M-4). To cut mild steel chain, place the loop completely around the chain link to form a girth hitch. Tighten the loop against the link by sliding the uli knots.

b. The *rubber band charge* is another easily fabricated, lightweight device that can be used to remove the locking mechanism or doorknob from wooden or light metal doors, or to break a standard-size padlock at the shackle.

(1) Cut a 10-inch piece of detonation cord and tie an overhand knot in one end. Using another piece of detonation cord, tie a uli knot with at least eight wraps around the first length of cord. As an alternative to the uli knot, pass the detonation cord through the center of a 20-gram Detaprime booster. Slide the uli knot or the Detaprime booster tightly up against the overhand knot. Secure it in place with either tape or string. Loop a strong rubber band around the base of the uli knot tied around the detonation cord, or around the base of the booster. Tie an overhand knot in the other end of the cord to form a pigtail for priming the charge (Figure M-5).

(2) Attach the charge to the doorknob (or locking mechanism) by pulling the loose end of the rubber band around the knob. The charge should be placed between the knob and the door frame. This places the explosive over the bolt that secures the door to the frame.

c. One of the simplest field-expedient charges for breaching wooden doors is the *flexible linear charge*. It can be made in almost any length and then cut to the right size quickly just before it is used. It can be rolled up and easily carried until needed. It is effective against hollow-core, particle-

filled, and solid wood doors. When detonated, the flexible linear charge cuts through the door near the hinges (Figure M-6).

(1) Lay out a length of double-sided contact tape with the top-side adhesive exposed. Place the necessary number of strands of detonation cord down the center of the double-sided tape, pressing them firmly in place. For hollow-core doors, use a single strand. For particle-filled doors, use two strands, and for solid wood doors use three. If the type doors encountered is unknown, use three strands. One of the strands must be cut about a foot longer than the others and should extend past the end of the double-sided tape. This forms a pigtail where the firing system is attached once the charge is in place.

(2) Cover the strands of detonation cord and all the exposed portions of the double-sided tape with either sturdy single-sided tape or another length of double-sided tape. Roll the charge, starting at the pigtail, with the double-sided tape surface that is to be placed against the door on the inside.

(3) At the breach site, place the charge straight up and down tightly against the door. If the charge is too long, angle it to best fit the door. If it is too short, place it so that it covers at least half of the door's height. Prime and fire the charge from the bottom.

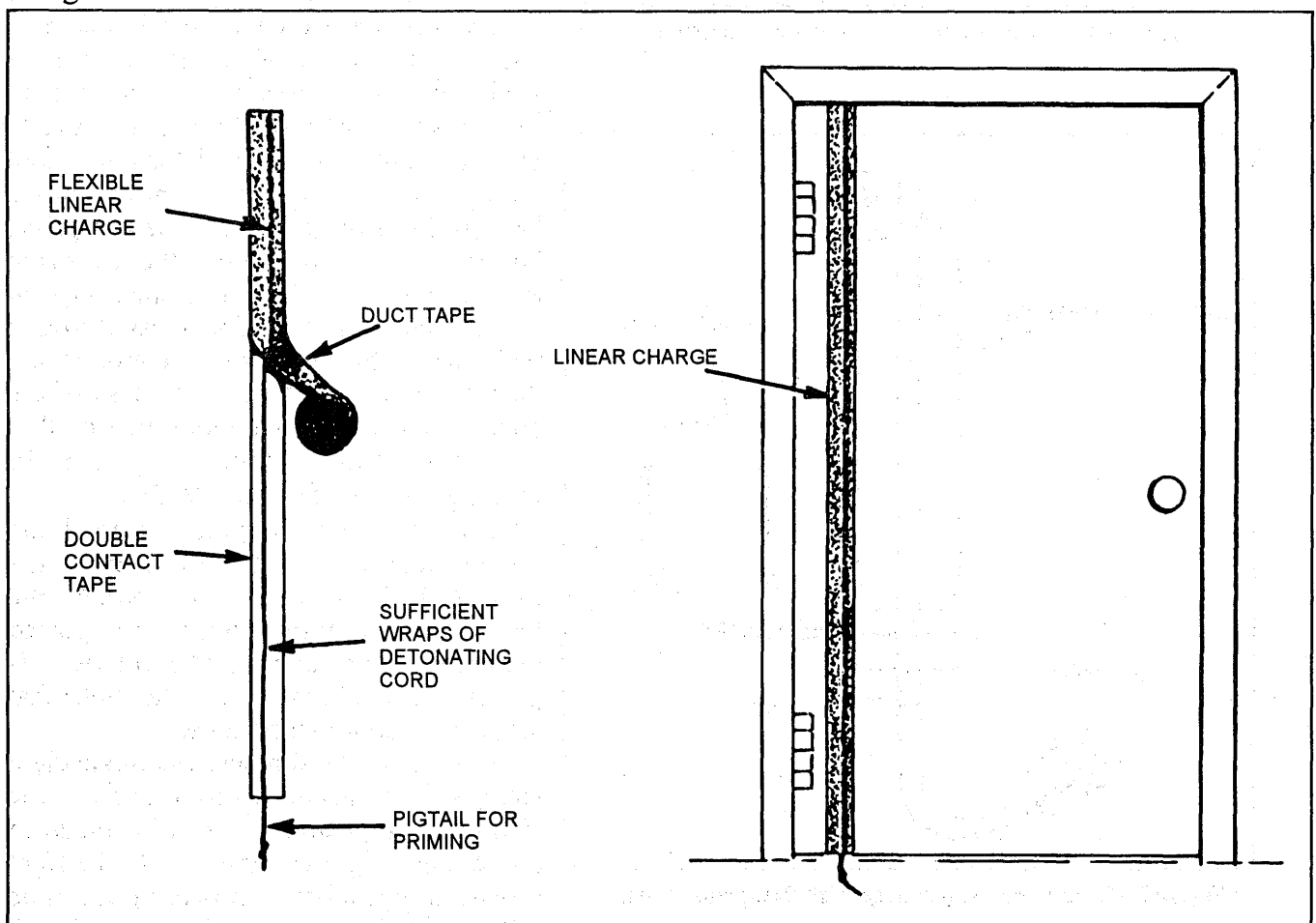


Figure M-6. Placement of the flexible linear charge.

d. A *doorknob charge* is easy to make and is highly effective against wooden or light metal doors. Charges for use against wooden doors can be made with detonation cord. If the charge is to breach a light metal door, either detonation cord (3 lengths) or 225 grain/foot FLSC should be used.

(1) Cut the appropriate amount of detonation cord for the charge. Use a 30-inch length for a hollow-core door. For a particle-filled door, use one 30-inch length and one 18-inch length. For a solid-core wooden door or a light metal door, use one 30-inch length and two 18-inch lengths.

(2) Cut the charge holder from a piece of stiff cardboard.

(3) Tape the detonation cord in the shape of a large "C" along the edge of the charge holder. Leave a 12-inch pigtail for priming (Figure M-7). Place double-sided tape on the back of the charge holder.

(4) If using FLSC, cut a length 21 inches long. Cut a 20-gram Detaprime booster in half. Tape the FLSC to the charge holder, leaving a 3-inch tail for priming. Bend the tail upward. Slide a 12-inch length of detonation cord through the Detaprime booster and tie an overhand knot on each end. Tape the booster and detonation cord combination to the tail end of the FLSC.

(5) Hang the charge on the door knob or locking mechanism. Secure it in place with the double-sided tape. The detonation cord must be held firmly against the door's surface.

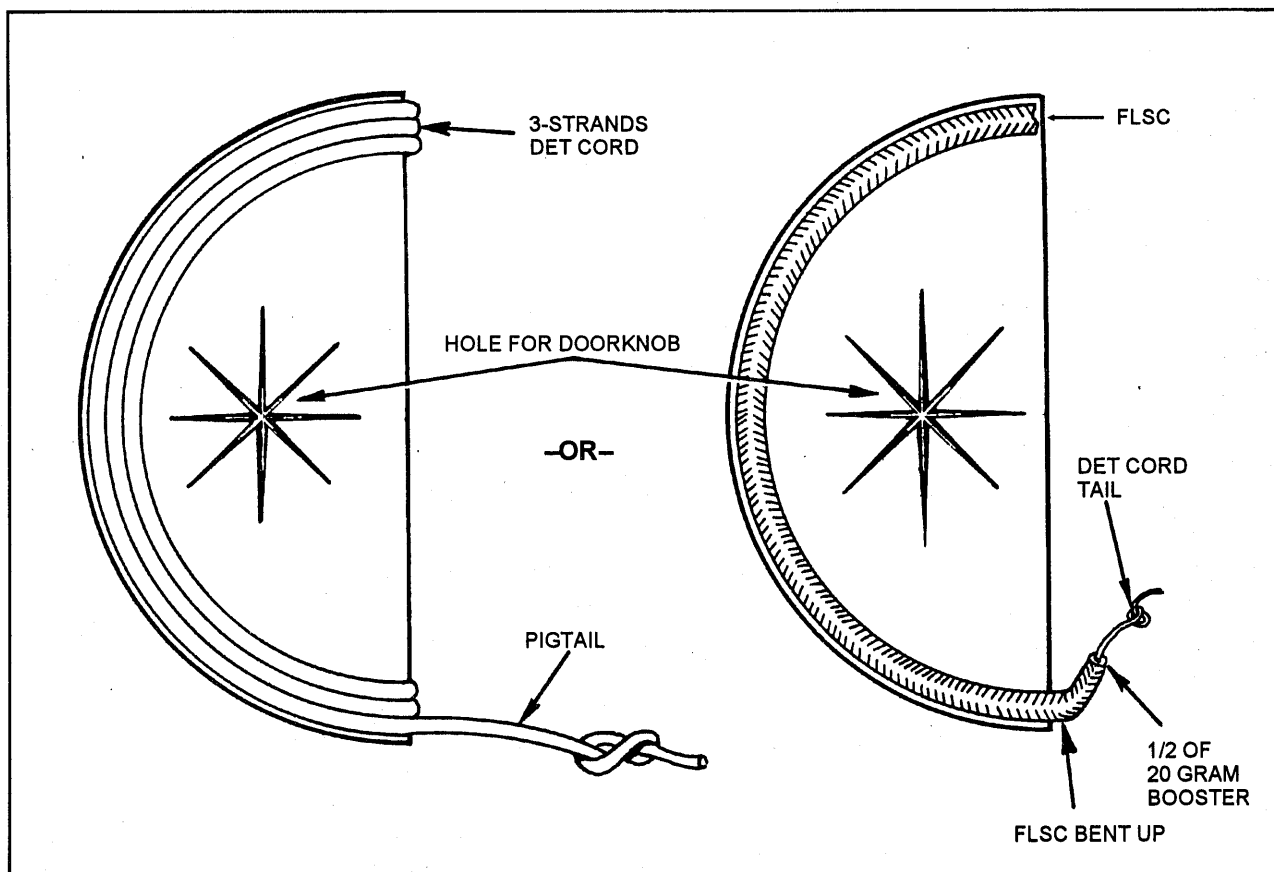


Figure M-7. Doorknob charge.

INFANTRY AND ARMOR SMALL-UNIT ACTIONS DURING MOUT

The first and most fundamental lesson learned from recent US and allied operations in built-up areas is the value of the fully integrated combined arms team. There is no denying the value of light infantry forces during MOUT. However, combat or OOTW in urban areas never should be considered a pure infantry task. Urban combat by units composed entirely of infantrymen is a historical anomaly. Across the spectrum of combat action in urban areas, powerful combined arms teams produce the best results. The actual composition of these teams must be determined based on a careful analysis by commanders at all levels. Light infantry units operating alone suffer from critical shortcomings that can be compensated for only by appropriate task organization with mechanized infantry, armor, and engineers. These teams must be supported by closely integrated aviation, fire support, communication, and logistical elements.

N-1. STRENGTHS, WEAKNESSES, AND EMPLOYMENT CONSIDERATIONS FOR SMALL COMBINED ARMS TEAMS

Because of the decentralized, fragmented nature of both OOTW and conventional battles in urban areas, dismounted infantrymen will always represent the bulk of any successful force. At the small-unit tactical level, light infantry forces have disadvantages that can be compensated for by mechanized infantry or armor units. Conversely, tanks and mechanized forces face problems in the confines of urban areas that place them at a severe disadvantage when operating alone. Only together can these forces accomplish their mission with minimal casualties while avoiding unnecessary collateral damage.

a. Light infantry forces lack heavy supporting firepower, protection, and long-range mobility. Armored forces, on the other hand, can deliver devastating fires, are fully protected against antipersonnel mines, fragments, and small arms, and have excellent mobility along unblocked routes.

b. Crewmen in armored vehicles have poor all-round vision through their vision blocks; they are easily blinded by smoke or dust. Tanks cannot elevate or depress their weapons enough to engage targets very close to the vehicle or those high up in tall buildings. Dismounted infantrymen have excellent all-round vision and can engage targets with small arms fire under almost all conditions.

c. Infantry small-arms fire within a building can eliminate resistance without seriously damaging the structure. Heavy fires from armored vehicles cause unwanted collateral damage or can destabilize basic structures.

d. If isolated or unsupported by dismounted infantry, armored vehicles (with the possible exception of the heavily protected main battle tank) are vulnerable to enemy hunter/killer teams firing light and medium antiarmor weapons. Armored vehicle gunners cannot easily identify enemy targets unless the commander exposes himself to fire by opening his hatch, or dismounted infantrymen direct the gunner onto the target.

e. Armored vehicles are noisy. Therefore, there is little chance of them arriving in an area undetected. Dismounted infantrymen can move stealthily into position without alerting the enemy. Armored vehicles can be blocked by improvised barricades, narrow streets and alleyways, or large amounts of rubble. Dismounted infantrymen can move over or around most urban terrain, regardless of the amount of damage to buildings.

f. Although they have limited fields of view at the typically short ranges normally encountered during MOUT, the thermal sights on armored vehicles can detect enemy activity through darkness and smoke, conditions that limit even the best-equipped dismounted infantry.

g. In some OOTW situations, armored vehicles project a psychological presence, an aura of invulnerability, that aids the friendly forces in deterring violence. Mounted patrols by armored vehicles can monitor large areas of a city while making their presence known to the entire populace, both friendly and unfriendly.

h. During cordon and search operations, armored vehicles can move mounted infantrymen rapidly to points where, together, they can dominate and isolate the cordoned area. With their long-range sights and weapons, armored vehicles can dominate large expanses of open area and thus free dismounted infantry to cordon closer terrain and visual dead space.

i. The mobile protected firepower of armored vehicles can be used to add security to resupply convoys and to extract wounded personnel under fire. The armored vehicle's smoke-generation capability can aid this and other small-unit actions.

N-2. INFANTRY-TANK/BFV COMBINED ARMS TEAM

An effective use of armored combat vehicles in most tactical situations is en mass. Armored units operating in platoon, company, and battalion strength combine mobility, protection, and firepower to seize the initiative from the enemy and greatly aid friendly success. However, combat in some urban and built-up areas is so decentralized, and avenues of approach for vehicles so channelized, that massed armored vehicles cannot be easily employed. The heavy firepower, mobility, and armor protection of the tank or BFV is still needed; however, this situation calls for fewer armored vehicles employed over broader areas. The decision to disperse rather than mass armored vehicles should be made only after a careful consideration of the command's present METT-T situation and anticipated operations in the near future. Decentralized armor support greatly increases a small infantry unit's combat power. However, such dispersed vehicles cannot be easily and quickly reconcentrated. Their sudden removal from throughout the combat area will necessitate a

tactical pause for reorganization and a change of tactical tempo, which could disrupt the ongoing combat operation at a critical time.

a. Traditionally, armored vehicles participating as part of a small-unit combined arms team have been tanks working with small groups of dismounted infantrymen. However, the advent of the BFV (especially the heavily protected variants) has meant that successful infantry/tank-type teams can be created around a few BFVs and some dismounted infantry. The BFV lacks the tank's main gun, but it has a powerful weapons combination in the TOW/25-mm/coax system. Unless specifically noted, the following discussion of infantry/tank teams also includes infantry/BFV and infantry/Sheridan teams. When the Armored Gun System (AGS) is fielded, it will replace the Sheridan armored vehicle in this role. Designed from the beginning to work closely with light infantry, the AGS will be an effective and powerful addition to the small-unit combined arms team.

b. The most common task organization of dispersed armor is to attach a tank platoon to an infantry company, with the platoon further subattached on the basis of a two-tank section to each of the lead rifle platoons. Individual tanks can be employed, but two-vehicle sections are preferred. A rifle squad is normally designated to work with each of the platoon's attached tanks.

c. Infantry/tank teams work together to bring the maximum combat power to bear on the enemy. The dismounted infantry provides the eyes and ears of the team. The infantry locates and identifies targets for the tank to engage. It maneuvers along covered and concealed routes to assault enemy elements fixed and suppressed by tank fire. It provides protection for the tank against attack by enemy dismounted infantry. Meanwhile, the tank provides heavy, continuous supporting fires against enemy strongpoints.

d. The dismounted infantry normally leads movement through built-up areas. The tanks follow and provide close overwatch. If the infantry discovers an enemy position or encounters resistance, the tank immediately responds with supporting fire to fix the enemy in place or suppress him and allow the infantry to develop the situation. After sufficient time to develop the situation or conduct short-range reconnaissance, the infantry squad leader directs the tank to move, if necessary, and identifies specific targets for the tank to engage.

e. Coordination between the tank commander and the squad leader must be close and continuous. The tank commander or driver may need to dismount and move, accompanied by the squad leader, to a position where the route or target can be better seen. Signals for initiating, shifting, or lifting fires must be understood by all. One of the greatest barriers to coordination and command and control in urban combat is the intense noise. Verbal commands should be backed up by simple, nonverbal signals.

f. The tank's on-board smoke generation system and its smoke grenade projectors may be used both to protect the tank from enemy fire and to provide concealment for the infantry forces as they either move across open areas or recover wounded. The use of smoke must be carefully coordinated. Although the tanks' sights can see through most smoke, dismounted infantrymen are at a significant disadvantage when enveloped in dense smoke clouds. The smoke

grenade launchers on the tank provide excellent, rapidly developed local smoke clouds, but the grenades produce burning fragments that are hazardous to infantrymen near the tank and that can ignite dangerous fires in urban areas.

g. Tanks and BFVs are valuable tools for assisting the assaulting forces isolate the objective area and seize a foothold. As the dismounted infantry then moves to clear the position and expand the foothold, the tanks are left behind. If possible, the tanks should move to positions where their fires can be used to prevent enemy reinforcement and engage enemy forces withdrawing from the position. However, at this time the tank crew must be very alert. Because of the nonlinear nature of urban battles, enemy forces may move to the rear or flanks of the now-isolated tanks and destroy them. If a small element of dismounted infantry cannot be spared to remain with the tanks, both vehicles in the section should move to positions of cover and mutual support. Loaders and vehicle commanders should man their external machine guns and be alert, especially for enemy infantry approaching from above, the rear, or from the flanks.

*** GLOSSARY**

ADA	air defense artillery
AGS	Armored Gun System
ANGLICO	air naval gunfire liaison company
AP	armor-piercing, antipersonnel
APC	armored personnel carrier
APDS-T	armor-piercing discarding sabot—tracer
APFSDS	armor-piercing, fin-stabilized, discarding sabot
AT	antitank
ATGMs	antitank guided missiles
ATTN	attention
AXP	ambulance exchange point
BDAR	battle damage assessment and repair
BDU	battery display unit; battle dress uniform
BFV	Bradley fighting vehicle
BMNT	beginning morning nautical twilight
BMPs	Threat fighting vehicles
BTRs	Threat fighting vehicles
CA	civil affairs
CAS	close air support
CEV	combat engineer vehicle
CFV	combat fighting vehicle
CI	configuration item; command information; counterintelligence
CN	chloroacetophenone
COLT	combat observation and lasing team
CP	command post
CS	combat support, chemical smoke, Ochlorobenzylidene malononitrile
CSS	combat service support
DA	Department of the Army
DEA	Drug Enforcement Agency
DPRE	displaced persons, refugee, and evacuee
DS	direct support
ECM	electronic countermeasures

EOD	explosive ordnance disposal
EPW	enemy prisoner of war
FA	field artillery
FAC	forward air controller
FAE	fuel air explosives
FASCAM	family of scatterable mines
FAST	Freight Automated System for Traffic Management, forward area support team
FBI	Federal Bureau of Investigation
FCL	final coordination line
FEBA	forward edge of battle area
FIST	fire support team
FLIR	forward-looking infrared
FLSC	flexible linear shaped charge
FM	field manual; frequency modulation
FO	forward observer
FPF	final protective fire
FPL	final protective line
FRAGO	fragmentary order
FSB	final staging base
FSE	fire support element
FSO	fire support officer
G3	Assistant Chief of Staff, G3 (Operations and Plans)
G5	Assistant Chief of Staff, G5 (Civil Affairs)
GS	general support
GPS	global positioning system
GSR	ground surveillance radar
GRREG	graves registration
HC	hydrogen chloride
HE	high explosive
HEAT	high-explosive antitank
HEAT-MP	high-explosive antitank, multipurpose
HEI-T	high-explosive incendiary—tracer
HMMWV	high-mobility, multipurpose, wheeled vehicle
IAW	in accordance with

ICM	improved capabilities missile
ID	identification
IPB	intelligence preparation of the battlefield
ITOW	improved TOW
ITV	improved TOW vehicle
J5	Plans and Policy Directorate
LAW	light antitank weapon
LCMS	laser countermeasure system
LD	line of departure
LIC	low-intensity conflict
LOGPAC	logistics package
LOS	line of sight
LTC	lieutenant colonel
MBA	main battle area
MCOO	modified, combined obstacle overlay
MDP	meteorological datum plane, main defensive position
MEDEVAC	medical evacuation
METT-T	mission, enemy, terrain, troops, and time available
MOPP	mission-oriented protective posture
MOUT	military operations on urbanized terrain
MP	military police
MRB	motorized rifle battalion
MRR	motorized rifle regiment
MSR	main supply route
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, chemical
NCA	national command authority
NCO	noncommissioned officer
NEO	noncombatant evacuation operations
NOE	nap-of-the-earth
NVD	night vision device
NVG	night vision goggles
OOTW	operations other than war
OP	observation post

OPCON	operational control
OPLAN	operation plan
OPORD	operation order
OPSEC	operational security
PA	public affairs
PAC	Personnel and Administration Center; plastic ammunition container
PDDA	power-driven decontaminating apparatus
PE	probable error
PEWS	platoon early warning system
POL	petroleum, oils, and lubricants
PSYOP	psychological operations
PW	prisoner of war
RCLR	recoilless rifle
REMs	remote sensors
ROE	rules of engagement
RP	reference point, red phosphorus
RPG	Threat antiarmor weapon
S1	Adjutant (US Army)
S2	intelligence officer
S3	Operations and Training Officer (US Army)
S4	Supply Officer (US Army)
S5	Civil Affairs Officer (US Army)
SALT	supporting arms liaison team
SAW	squad automatic weapon
SEAD	suppression of enemy air defenses
SEAL	sea-air-land team
SF	special forces
SIDPERS	Standard Installation/Division Personnel System
SMAW	shoulder-launched, multipurpose, assault weapon
SOF	special operations force
SOP	standing operating procedure
STB	supertopical bleach
SWAT	Special Weapons and Tactics (civilian police)
TAACOM	Theater Army Area Command

TF	task force
TI	technical inspection; technical intelligence
TM	technical manual, team (graphics only)
TNT	trinitrotoluene
TOC	tactical operations center
TOW	tube-launched, optically tracked, wire-guided missile
TP-T	target practice-tracer
TRADOC	Training and Doctrine Command
TTP	tactics, techniques, and procedures
UAV	unmanned aerial vehicle
UCMJ	Uniform Code of Military Justice
US	United States
USAF	United States Air Force
USMC	United States Marine Corps
USN	United States Navy
VT	variable time
WP	white phosphorous

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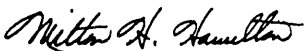
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